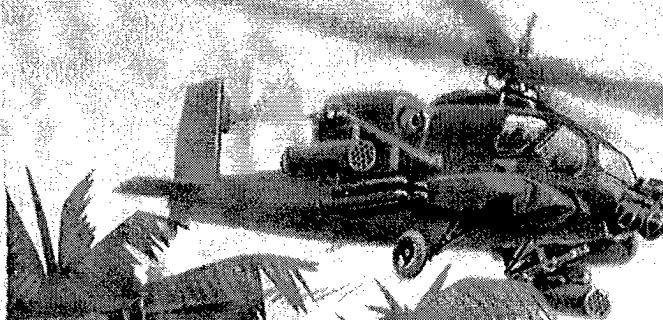
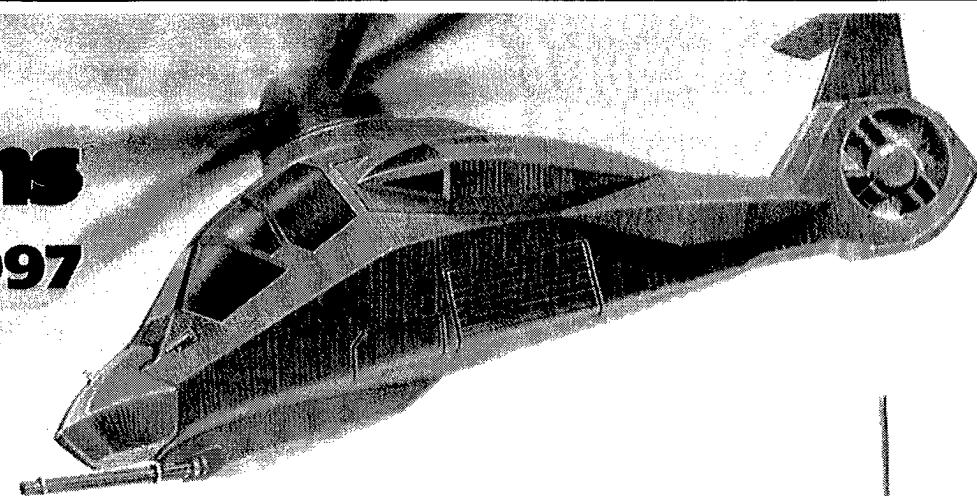


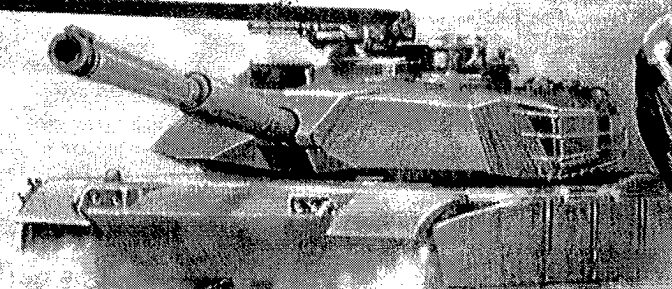


Weapon Systems

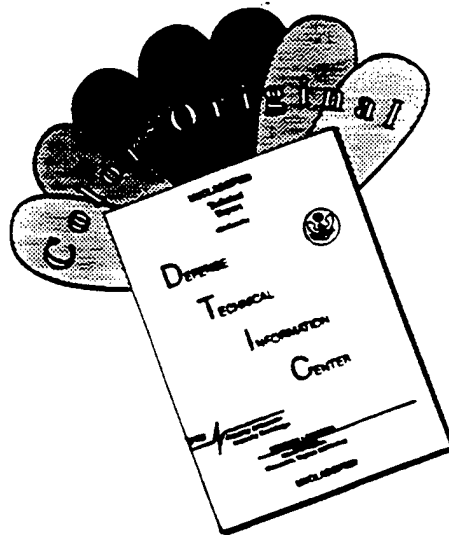
United States Army 1997



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To the Reader:

Joint Vision 2010, the Chairman's of the Joint Chiefs of Staff vision of future joint warfighting concepts, will guide the services toward a more effective future joint force. America's Army is ready to move forward as the land component member of that joint warfighting force. The Army brings the ability to conduct prompt operations on land throughout the spectrum of crisis. The Army is modernizing its forces according to the concepts of Army Vision 2010 and the guidelines of the Army modernization objectives. Each modernization objective and each Army vision concept has a counterpart in the future operational concepts of *Joint Vision 2010*, ensuring that the Army remains synchronized with the Chairman's vision.

This handbook outlines the major programs that the Army is pursuing to realize that vision. These systems will provide the tools for America's trained and ready soldiers to be the most powerful force in the world. It is our hope that you will find this book a valuable and informative reference work.

19970401 130

Ronald V. Hite
Lieutenant General, GS
Military Deputy to the ASA(RDA)

Gilbert F. Decker
Assistant Secretary of the Army
(Research, Development and Acquisition)

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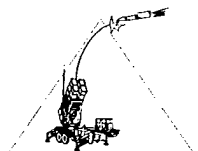
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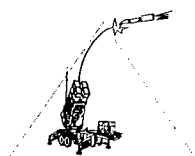
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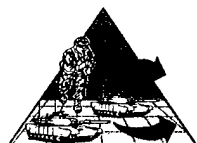
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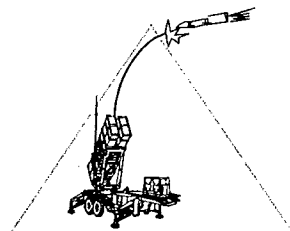
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This book is divided into five **Modernization Objective** sections. The systems are listed only in the Modernization Objective section to which the system adds the most capability.



Project & Sustain



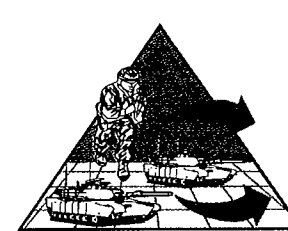
Protect the Force



Win the Information War

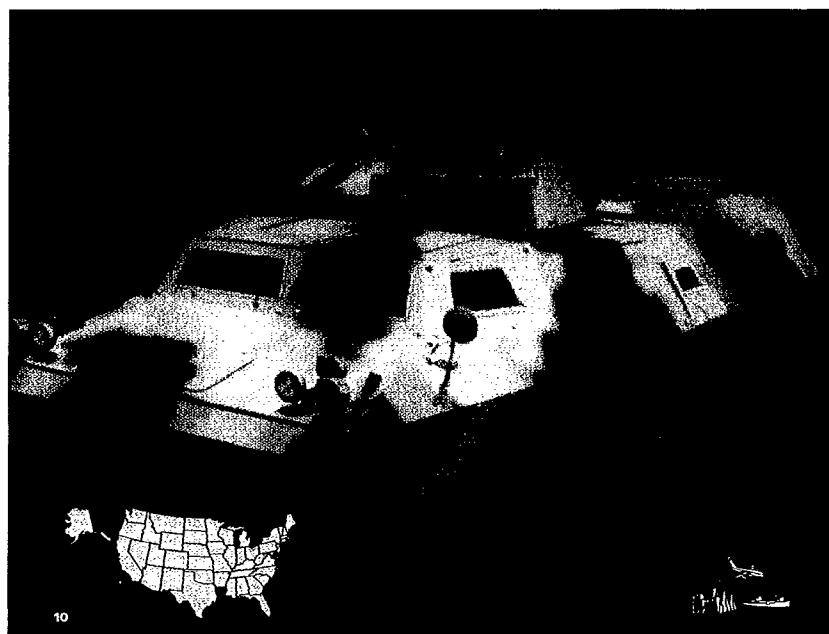


Conduct Precision Strike



Dominate the Maneuver Battle

The Life Cycle Management Model shows the development stage that the system is in. The terms are explained on the facing page.



The **U.S. Outline** highlights the states in which system contractors with $\geq 5\%$ of total program value for FY97 are located.

The **Modernization Objective** icons are displayed for all Modernization Objectives to which the system adds capabilities.

Source and Technology	Concept	Design	EMD	Production and Deployment	Operations and Support
<p>MISSION: The Armored Security Vehicle (ASV) supports the Military Police (MP) missions of law enforcement, area security, battlefield circulation and Enemy Prisoner of War operations over the entire continuum of war and on operations other than war. It will be fielded to Corps Support MP Companies engaged in these missions.</p> <p>CHARACTERISTICS: The ASV is a turret, armored, all-wheeled drive vehicle that provides increased ballistic and landmine mine protection to the MP. Its primary weapon is the M107 Grenade Machine Gun, and it can also mount the M2 .50-caliber machine gun. The fully enclosed turret includes a day/night sight for target acquisition. The vehicle provides all-around 7.62 mm ball protection and 12.7 mm armor piercing for the crew compartment, weapons station and ammunition storage areas. The ASV provides overhead protection against 60 mm mortars at 10 meters and underbody protection against 4 lb TNT mines. In addition, the armor must provide overhead blast protection from 155 mm at 15 meters and 12 lb TNT mines in the wheel wells. Other survivability enhancements include gas particulate, ventilated fireproof, a multi-salvo grenade launcher, crew/engine fire suppression system, an intercom with radio interface, transparent armor and blackout capability.</p> <p>FOREIGN COUNTERPART: Germany - Henschel, Netherlands - DAF, France - Panhard</p> <p>FOREIGN MILITARY SALES: No foreign military sales.</p> <p>PROGRAM STATUS: ASV is in engineering and manufacturing development.</p> <p>PROJECTED ACTIVITIES: Operational and developmental testing of prototypes at Fort Hood, TX with a production award scheduled for June 1997.</p> <p>PRIME CONTRACTOR: Textron (Manne and Land Systems Division) (New Orleans, LA)</p> <p>* See appendix for list of subcontractors.</p>					

The **Prime Contractor(s)** for the system is displayed. The major sub-contractors can be found listed in the "Contractors by System" and "Contractors by State" Appendices.

SCIENCE AND TECHNOLOGY (S&T):	Efforts focused on the identification and development of promising technologies (not directly tied to specific acquisition programs) are collectively called science and technology programs. S&T encompasses programs in basic research, exploratory development, and advanced development.
CONCEPT EXPLORATION AND DEFINITION:	<p>The focus of this phase is on defining and evaluating the feasibility of alternative concepts and providing the basis for assessing the relative merits of the concepts. The objectives of this phase are to:</p> <ul style="list-style-type: none"> • Explore various material alternatives to satisfying the documented mission need, • Define the most promising system concept(s), • Develop supporting analysis and information to include identifying high risk areas and risk management approaches to support the Milestone I decision, and • Develop a proposed acquisition strategy and initial program objectives for cost, schedule, and performance for the most promising system concept(s).
DEMONSTRATION AND VALIDATION (DEM/VAL):	<p>When warranted, multiple design approaches and parallel technologies are pursued within the system concept(s) during this phase. The objectives of this phase are to:</p> <ul style="list-style-type: none"> • Better define the critical design characteristics and expected capabilities of the system concept(s), • Demonstrate that the technologies critical to the most promising concept(s) can be incorporated into system design(s) with confidence, • Prove that the processes critical to the most promising system concept(s) are understood and attainable, • Develop the analysis/information needed to support a Milestone II decision, and • Establish a proposed Development Baseline containing refined program cost, schedule, and performance objectives for the most promising design approach.
ENGINEERING AND MANUFACTURING DEVELOPMENT (EMD):	<p>The objectives of this phase are to:</p> <ul style="list-style-type: none"> • Translate the most promising design approach developed in the Demonstration and Validation phase into a stable, producible and cost effective system design, • Validate the manufacturing or production process, and • Demonstrate through testing that the system capabilities: <ul style="list-style-type: none"> • Meet contract specification requirements, and • Satisfy the mission need and meet minimum acceptable operational performance requirements.
PRODUCTION AND DEPLOYMENT:	<p>System performance and quality will be monitored by follow-on test and evaluation during this phase. The objectives of this phase are to:</p> <ul style="list-style-type: none"> • Establish a stable, efficient production and support base, • Achieve an operational capability that satisfies the mission need, and • Conduct follow-on operational and production verification testing to confirm and monitor performance and quality and verify the correction of deficiencies.
OPERATIONS AND SUPPORT:	<p>This phase overlaps with the Production and Deployment phase, and begins after initial systems have been fielded. The objectives of this phase are to:</p> <ul style="list-style-type: none"> • Ensure the fielded system continues to provide capabilities required to meet the identified mission need, and • Identify shortcomings or deficiencies that must be corrected to improve performance.

Leading the Way to JV 2010 and Beyond

"...Tomorrow's Force must be as ready as today's and therein lies a very big challenge. While we have been able to maintain high readiness levels throughout the years of downsizing, we must now turn to replacing old equipment and sustaining a prudent modernization program in the future."

GEN John M. Shalikashvili
Chairman, Joint Chiefs of Staff
April 10, 1996

The United States military is in transition, heading away from a large Cold War force to a smaller but more capable joint force that can meet all of America's defense needs. The rapid advance of information technology makes this transformation possible. Declining defense resources make this transformation essential to the continued dominance of the U.S. military. In *Joint Vision 2010*, the Chairman of the Joint Chiefs of Staff describes the operational concepts and capabilities of that future joint force.

While all the services are moving towards Joint Vision 2010 (JV 2010), the Army leads the way. Army Vision 2010 provides the directional azimuth for modernization through its six patterns of operations. The Army Modernization Plan, in turn, describes five modernization objectives that align with the operational concepts of JV 2010. The Modernization Plan and the Force XXI process will move us to Army XXI, which will be an integral part of JV 2010's vision.

Army Weapon Systems 1997 provides an in-depth look at the weapon systems that equip America's Army today and will equip Army XXI in the future. The programs in this book range from high to low profile, but each program has an important role to play in modernization. Army XXI will require the full package of systems and upgrades if it and JV 2010 are to become a reality. This book is not a catalog of mix-and-match systems, but a description of an integrated program that will bring the Army into the future.



"The nature of modern warfare demands that we fight as a joint team.

This was important yesterday, it is essential today, and it will be even more imperative tomorrow. Joint Vision 2010 provides an operationally based template for the evolution of the Armed Forces for a challenging and uncertain future.

It must become a benchmark for the Service and Unified Command visions."

GEN John M. Shalikashvili
Chairman, Joint Chiefs of Staff



JV 2010 aims to provide a conceptual template for how America's Armed Forces will achieve new levels of effectiveness in joint warfighting through the integration of its people with new technological opportunities. America's Armed Forces have the best people, but they must be given the best technology and the right kind of technology in order to retain their advantage over the rest of the world. The Armed Forces must modernize in such a way that they are prepared to fight a 21st Century conflict. The concepts in JV 2010 will help guide that modernization to ensure that our people receive the technology that will make the most difference.

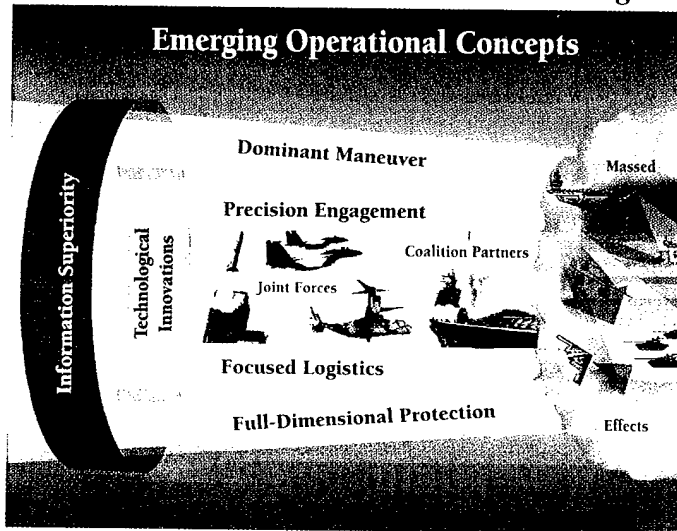
The future vision of warfare in JV 2010 centers on Information Superiority, which is defined as the capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same. Information warfare involves both offensive operations against an adversary's ability to collect and use data and defensive operations to protect our own information systems from direct and indirect attack. Information superiority requires that we dominate in both kinds of operations.

Information superiority over an adversary makes it possible for U.S. forces to implement four operational concepts: Dominant Maneuver, Precision Engagement, Focused Logistics, and Full-Dimensional Protection. These four concepts focus on delivering massed effects (i.e. bringing the concentration of combat power against an adversary at the decisive time and place, without needing to physically mass forces as much as in the past). Information Superiority can produce massed effects, because it creates an information imbalance between friendly forces and the adversary. Figure 1 shows how these concepts fit together.

JV 2010 describes dominant maneuver as the multidimensional application of information, engagement, and mobility capabilities to position and employ widely dispersed joint air, land, sea, and space forces to accomplish the assigned operational tasks. It is the old Army approach of shoot, move, and communicate taken to a much more sophisticated level.

Precision engagement is a system of systems that will enable our forces to locate the objective or target, provide responsive command and control, generate the desired effect, assess our level of success, and retain the flexibility to reengage with precision when required. Precision engagement reinforces dominant maneuver by allowing U.S. forces to shape the battlespace from extended ranges.

Figure 1



Focused logistics is the fusion of information, logistics, and transportation technologies to provide rapid crisis response, to track and shift assets even while en route, and to deliver tailored logistics packages and sustainment directly at the strategic, operational, and tactical level of operations. It will allow U.S. forces to project their power more quickly and operate more efficiently.

Full dimensional protection will guarantee U.S. forces freedom of action in the battlespace by protecting them from many of the same technologies they will exploit. A multi-layer defense against ballistic missiles, cruise missiles, and nuclear, biological and chemical weapons will give the future joint force the freedom to deploy, maneuver and engage the adversary quickly and decisively.

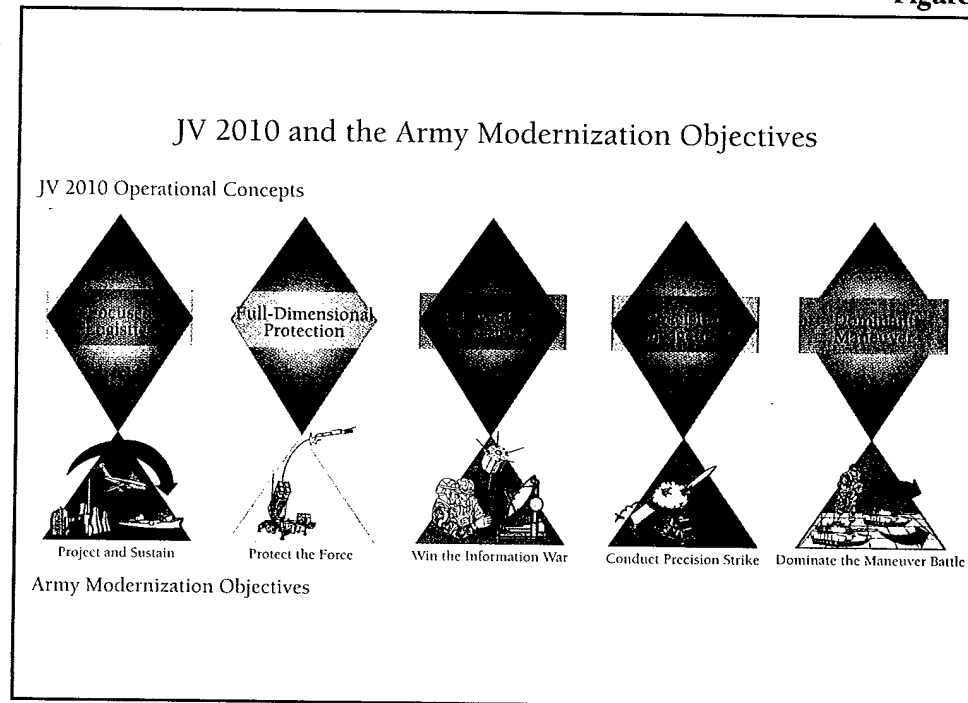
These operational concepts add up to full spectrum dominance of an adversary across all categories of conflict. JV 2010 is about merging the best technology and the right technology with the best people to achieve full spectrum dominance. The Army is already on its way there.

ARMY SUPPORT OF JV 2010: OBJECTIVES AND SYSTEMS

The Army Modernization Plan lays out five modernization objectives that align with the operational concepts of JV 2010. The technology and concepts that are being tested in the Force XXI process will be the means to achieving those modernization objectives and moving toward Army XXI. It is through the Force XXI process, and the synchronization of Army capabilities and a modernization strategy, that the Army is leading the way to JV 2010 and beyond. Figure 2 shows the linkage between the JV 2010 operational concepts and the five Army modernization objectives.

Win the information war; dominate the maneuver battlefield; conduct precision strike; project and sustain; and protect the force are the Army's modernization objectives. Each modernization objective captures the same future capabilities as its JV 2010 counterpart. Army XXI will utilize the full package of operational concepts in JV 2010, putting Army systems and Army warfighters at the core of the future joint force.

Figure 2



"Modernization has had to make do with what we could salvage."

The Hon. Gilbert F. Decker
Assistant Secretary of the Army for
Research, Development, and Acquisition

The Army Modernization Plan (AMP) describes the what and why of the systems and capabilities that will go into Army XXI. Each objective is a statement of capabilities that the Army will need in the future to retain an overwhelming technological and doctrinal advantage over opposing forces. The plan also describes the systems needed to realize those capabilities. Getting the resources to modernize our forces towards each objective is critical to making Army XXI a success.

***"Who the hell gets excited about a 2 1/2 ton truck? Well, I do.
If you are in combat and can't move supplies you're in trouble."***

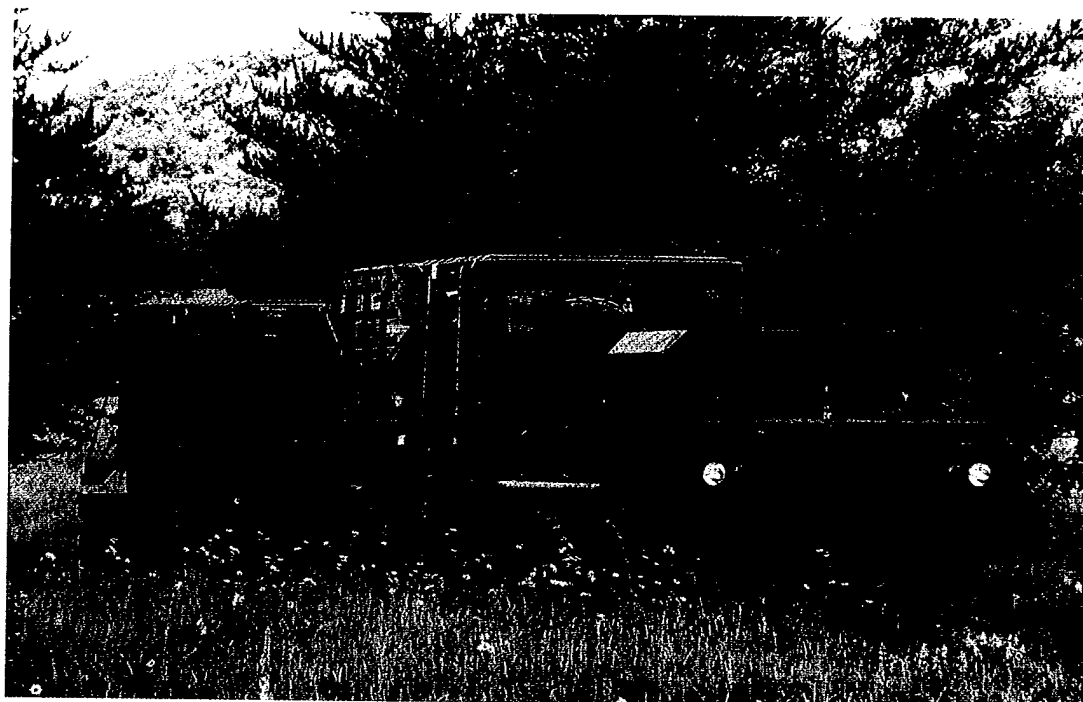
The Hon. Gilbert F. Decker
Assistant Secretary of the Army for
Research, Development, and Acquisition

Project and Sustain

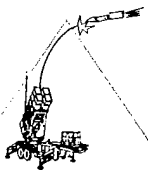


Project & sustain describes those systems and capabilities needed to rapidly deploy U.S. forces into a potentially hostile area and to sustain and augment them as necessary once deployed. This objective covers the critical logistic systems needed to move a force to and within a theater and to keep that force supplied. It includes non-Army strategic lift programs like the USAF C-17 and the Navy's Large Medium Speed Roll-on/Roll-off Ship (LMSR). Army efforts to improve the self-deployability of systems like the Comanche and Apache Longbow also support this objective. Project & Sustain covers the workhorses of intratheater lift like the UH-60 Black Hawk, the High Mobility Multipurpose Wheeled Vehicle (HMMWV), the Family of Medium Tactical Vehicles, and the Palletized Load System. It also includes systems

like the Total Distribution Program which track the flow of supplies. Improved logistic efficiency will permit a move away from "supply push" to "just in time" logistics that will make optimal use of lift assets. Finally, it includes the systems like Force Provider, Family of Operational Rations and Deployable Medical Systems which improve the quality of life for soldiers in forward areas.



Protect the Force




Protect the Force describes the systems and capabilities needed to enhance the survivability of U.S. forces against the wide range of modern battlefield threats. Once a force has been projected into a region, it must be able to defend itself against deep strikes by the adversary. If the forward assembly areas cannot be defended, the U.S. cannot easily build up its forces. The Army requires systems for theater missile defense and chemical and biological weapon detection and defense. The Theater High Altitude Area Defense System (THAAD) and Medium Air Defense System (MEADS) are two systems in this category. The Army must also improve the survivability of its forces in combat, which means enhancing soldier survivability through the development of items like lightweight body armor and combat identification systems.

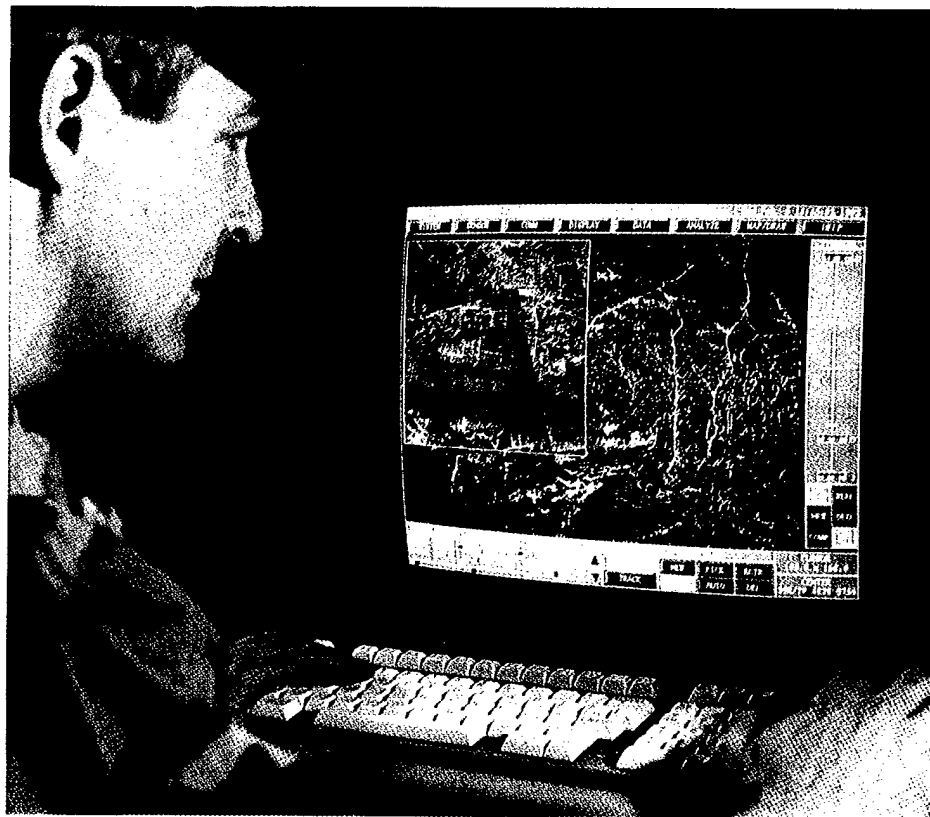
"There's a whole bunch of unglamorous things in the Army that are absolutely vital to the combat force."

The Hon. Gilbert E. Decker
Assistant Secretary of the Army for
Research, Development, and Acquisition

Win the Information War



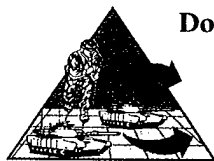
Win the information war describes systems and capabilities needed to give U.S. forces an overwhelming information advantage in combat. Once the U.S. projects a force into a region and begins the build-up for the maneuver battle, the force must know where the adversary is and what it is doing. The Comanche will serve as the commander's "eyes and ears" to provide tactical reconnaissance and battlefield situational awareness. As the ground maneuver element of the joint force, the Army needs improved Command, Control, Communications, Computers and Intelligence (C⁴I) systems that will allow it to conduct deep simultaneous attacks against the enemy, while limiting the exposure of friendly forces. This includes systems that will provide all commanders and soldiers with total situational awareness, allowing them to know where both friendly and hostile units are. It includes the sensors that will detect and identify targets as well as the systems that will interpret and move the data to the appropriate users. It also includes the systems that will protect information about the locations and numbers of friendly forces.



Conduct Precision Strike

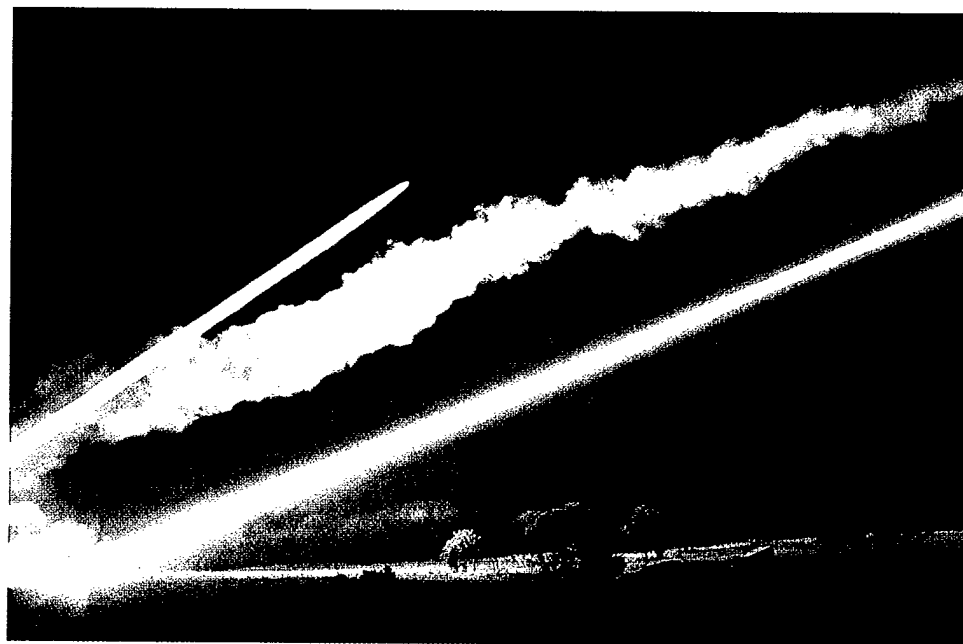


Conduct precision strike describes systems and capabilities needed to strike at hostile forces in their assembly areas and to shape the maneuver battlefield. As the projected force prepares to move to the maneuver battle, the Army, as part of the joint team, must be able to destroy and disrupt the adversary as much as possible before Army maneuver units make contact. Both the Apache Longbow and the Comanche will allow the commander to plan and execute the close and deep battles rapidly, day or night and in any weather. Systems such as the Army Tactical Missile System (ATACMS) and the Multiple Launch Rocket System (MLRS) using precision munitions will allow U.S. forces to engage and destroy hostile forces before contact.



Dominate the Maneuver Battle

Dominate the maneuver battle describes the systems and capabilities needed to retain land force dominance over opposing forces. When Army maneuver units move to engage the adversary, they must have an overwhelming technological advantage in order to produce massed effects. A smaller Army needs to hit harder, move faster and have better situational awareness, if it is to dominate the battlefield. This means providing upgrades to existing systems like Apache, Abrams and Bradley, as well as acquiring new systems like Line-of-Sight Anti-Tank (LOSAT) and the Crusader advanced field artillery system. These systems will ensure that as U.S. maneuver units close with the adversary, they will have an overwhelming technological advantage, achieving modernization overmatch.



ARMY MODERNIZATION: LEADING THE WAY TO JV 2010 AND BEYOND

The Army is well-situated to lead the way toward the Chairman's vision of the future force of full spectrum dominance. But it can only do so if its modernization plan is adequately resourced. Most of the systems in this book are not glamorous and for some their contribution to Army XXI may not be immediately clear. However, each system in the book is part of an integrated whole that will lead to Army XXI and JV 2010.

Each system in this book is listed according to the Army modernization objective that it primarily supports and the capabilities they enhance the most. On each system page are icons showing which other modernization objectives that system supports. As you, the reader, examine these systems, remember that each modernization icon represents a set of future capabilities that tomorrow's Army must realize for it to remain the dominant military force in the world.

"...we mortgaged the modernization account to take care of the people. Now it's time to rebalance that equation."

GEN Dennis J. Reimer
Chief of Staff of the Army
23 April 1996



The systems in this book, like the capabilities in the Army Modernization Plan, are part of an integrated approach to make the Army of the future capable of meeting the increased demands of our nation with fewer resources. Each system and each capability has an important role to play in making modernization a reality. Each system and each capability will contribute towards the Army's ability to respond to our nation's needs. The systems in this book are today's investment to ensure the future readiness of our Army. The Army of tomorrow will rely on these systems to successfully perform all assigned missions.



The Army of tomorrow will be a smaller, continental U.S. (CONUS) based force that will require a greater ability to project and sustain its power anywhere in the world. To realize that objective, Army systems need to be light, lethal and modular, so that it can project more capabilities with fewer resources. The Army also needs to have sufficient strategic and tactical lift assets to move its forces around the globe. Finally, the Army must project itself efficiently by taking advantage of new technologies to move only what is absolutely necessary. Improved logistical information systems and a new emphasis on split based operations will allow the Army to fully sustain its forces while projecting fewer support elements.

Major Regional Contingencies (MRCs) and crisis response operations are the most demanding scenarios for project and sustain, because they require rapid movement of large numbers of assets. Systems and approaches that support these intensive operations will also support other missions such as humanitarian relief and peacekeeping. In any crisis, the Army will need highly lethal early entry forces that can help secure entry points into a theater. Such forces need to be light, modular and rapidly transportable, but they also need improved defense and logistics assets that will permit them to hold the entry points. One example in this area is the Force Projection Tactical Operations Center (FP TOC), which will give the early entry commander an improved ability to manage the Theater Missile Defense (TMD) fight during the build-up phase.

Once the entry points are secure, the Army needs to be able to move heavier forces and supporting logistics forces into the theater quickly. This rapid build-up phase relies on the availability of large transport aircraft and large roll-on/roll-off ships to move the necessary equipment and supplies to the theater. The USAF C-17 and the USN Large Medium Speed Roll-On/Roll-Off (LMSR) ships are the critical programs for this capability. The build-up phase also depends on basic items like rail cars to get armored vehicles to their ships and the Family of Medium Tactical Vehicles (FMTV) to move the armored vehicles around the theater of war. There is also a role for advanced technology programs like the total distribution program, which will allow the Army to track items through every phase of transport, as commercial shippers can.

As Army forces build up in a theater, those forces require more than just a constant flow of supplies. The Army needs compact lightweight support systems that can move the supplies and meet other needs, be they medical, recreational or logistical. Systems like Force Provider and the Family of Operational Rations enhance the quality of life for soldiers in forward areas. Deployable Medical Systems (DEPMEDS) and Telemedicine will greatly improve the medical care available to soldiers in forward areas. The Improved Family of Test Equipment will improve the reliability and combat availability of systems in the theater. Project & Sustain means ensuring that the Army can get to where it has to fight with the equipment and supplies it needs to get the job done.



SCIENCE AND TECHNOLOGY

CONCEPT

DEMI/VAL

EMD

PRODUCTION AND DEPLOYMENT

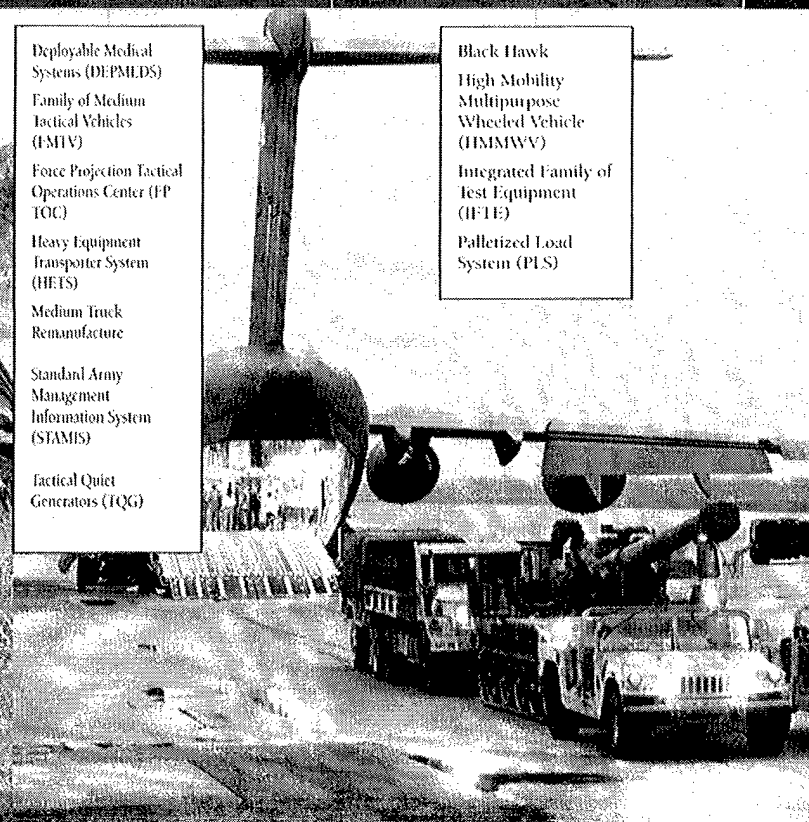
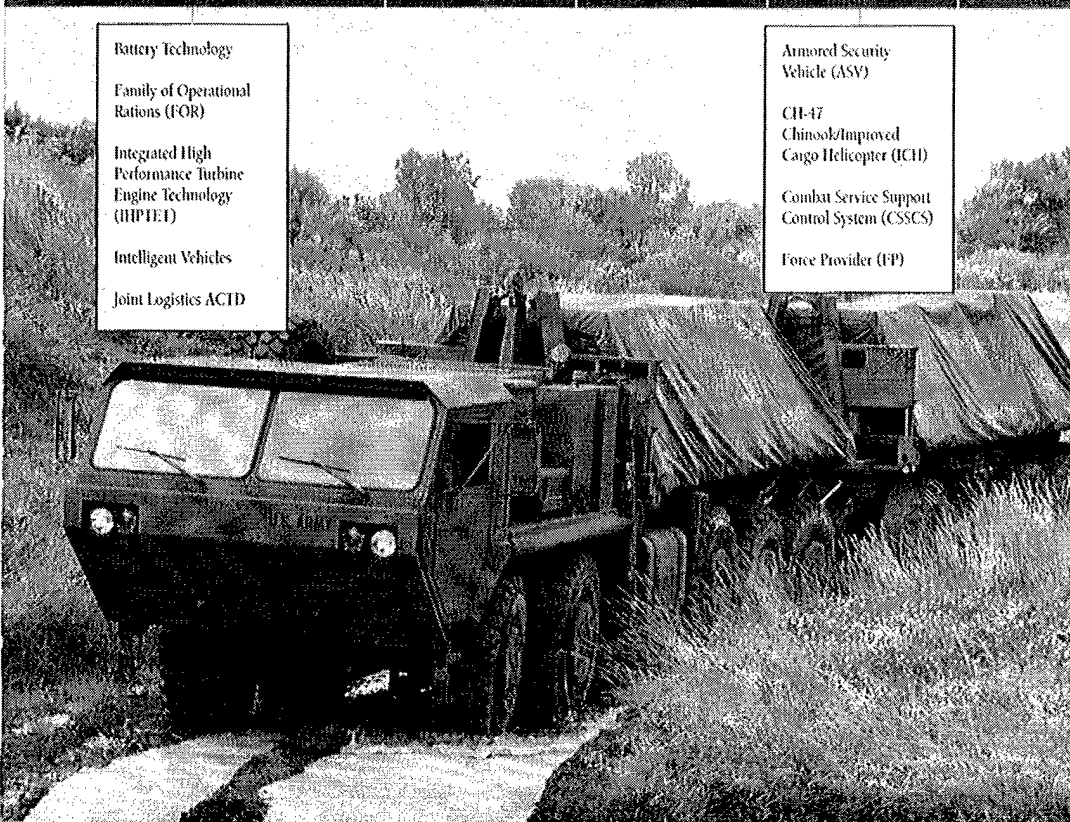
OPERATIONS AND SUPPORT

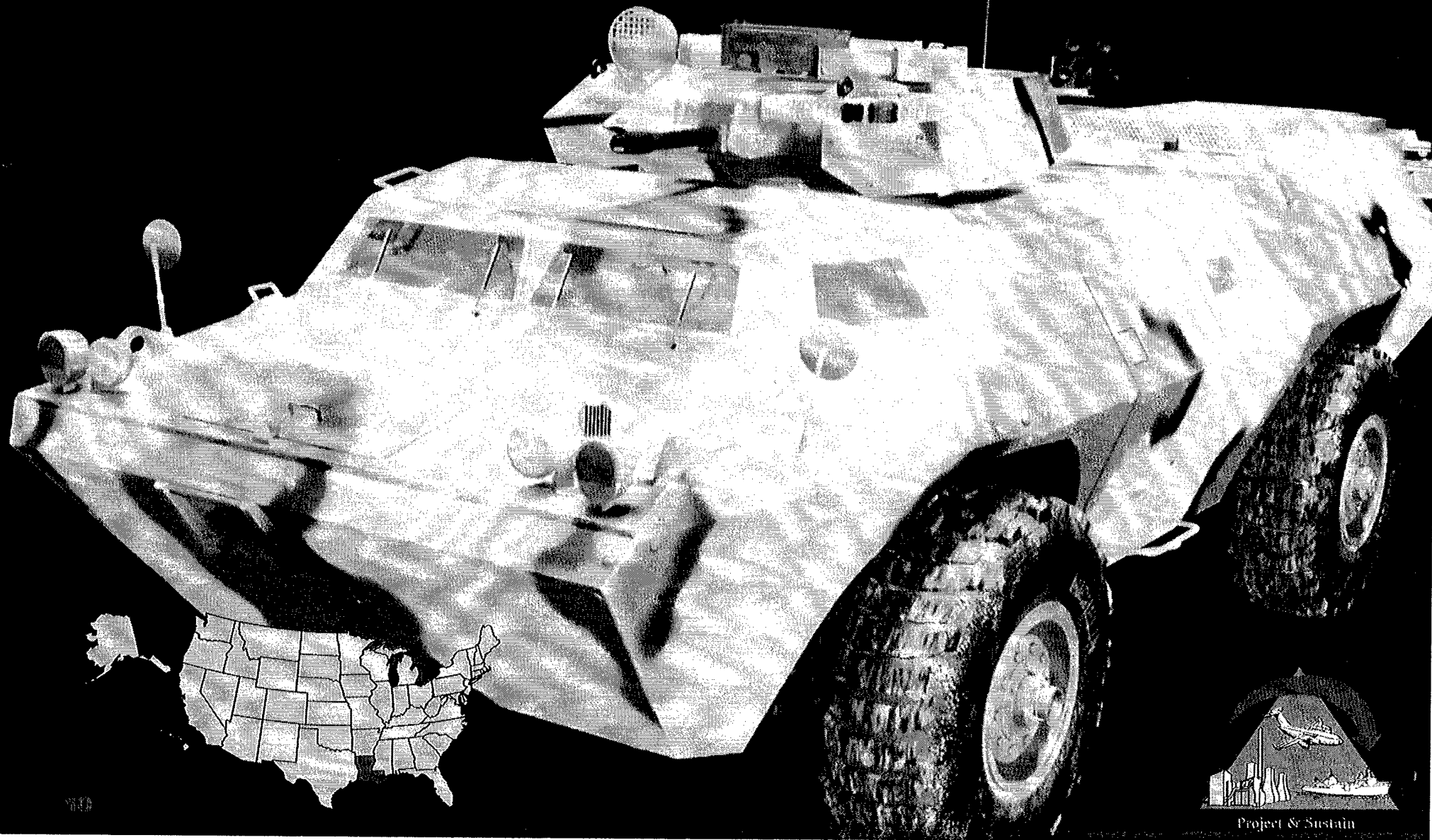
Battery Technology
Family of Operational Rations (FOR)
Integrated High Performance Turbine Engine Technology (IHPTET)
Intelligent Vehicles
Joint Logistics ACID

Armored Security Vehicle (ASV)
CH-47 Chinook/Improved Cargo Helicopter (ICH)
Combat Service Support Control System (CSSCS)
Force Provider (FP)

Deployable Medical Systems (DEPMEDS)
Family of Medium Tactical Vehicles (FMIV)
Force Projection Tactical Operations Center (FP TOC)
Heavy Equipment Transporter System (HETS)
Medium Truck Remanufacture
Standard Army Management Information System (STAMIS)
Tactical Quiet Generators (TQG)

Black Hawk
High Mobility Multipurpose Wheeled Vehicle (HMMWV)
Integrated Family of Test Equipment (IFTE)
Palletized Load System (PLS)





MISSION: The Armored Security Vehicle (ASV) supports the Military Police (MP) missions of law enforcement, area security, battlefield circulation and Enemy Prisoner of War operations over the entire continuum of war and on operations other than war. It will be fielded to Corps Support MP Companies engaged in these missions.

CHARACTERISTICS: The ASV is a turreted, armored, all-wheeled drive vehicle that provides increased ballistic and landmine protection to the MP. Its primary weapon is the MK19 Grenade Machine Gun, and it can also mount the M2 .50 caliber machine gun. The fully enclosed turret includes a day/night sight for target acquisition. The vehicle provides all around protection from 7.62 mm ball and protection from 12.7 mm armor piercing for the crew compartment, weapons station and ammunition storage areas. The ASV provides overhead protection against 60 mm mortars at 10 meters and underbody protection against 4 lb TNT mines. In addition, the armor must provide overhead blast protection from 155 mm at 15 meters and 12 lb TNT mines in the wheel wells. Other survivability enhancements include gas particulate, ventilated facepieces, a multi-salvo grenade launcher, crew/engine fire suppression system, an intercom with radio interface, transparent armor and blackout capability.

FOREIGN COUNTERPART: Germany - Theissen -Henschel; Netherlands - DAF; France - Panhard

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: ASV is in engineering and manufacturing development.

PROJECTED ACTIVITIES: Operational and developmental testing of prototypes at Fort Hood, TX with a production award scheduled for June 1997.

PRIME CONTRACTOR: Textron (Marine and Land Systems Division) (New Orleans, LA)

* See appendix for list of subcontractors.



MISSION: The Black Hawk provides utility and assault helicopter capability.

CHARACTERISTICS: The Black Hawk (UH-60) is a utility, tactical, transport helicopter that performs many missions in the Army. The Black Hawk is the primary helicopter for air assault, general support, and aeromedical evacuation units. Modified Black Hawks also fulfill command and control, electronic warfare, and special operations roles. The Black Hawk has enhanced the overall mobility of the Army because of its dramatic improvements in troop capacity and cargo lift capability compared to the UH-1 "Huey" it replaces. Now, an entire 11-man, fully equipped infantry squad can be lifted in one Black Hawk, and the troops can be transported faster and in most weather conditions. The Black Hawk also is the first utility and assault helicopter that adds to the Army's Division-level mobility; for example, it can reposition a 105 mm howitzer, its crew of six, and up to 30 rounds of ammunition in a single lift. The aircraft's critical components and systems are armored or redundant to enable it to withstand multiple small arms hits, and its airframe is designed to progressively crush on impact to protect the crew and passengers in a crash. Ease of maintenance in the field was designed into the Black Hawk from the beginning.

	UH-60A	UH-60L
Max gross weight:	20,250 lbs	22,000 lbs 23,500 lbs (External Cargo)
Cruise speed:	139 kt	150 kt
Endurance:	2.3 hr	2.1 hr
Max range:	320 nm	306 nm
Crew:	2 pilots, 2 crew chief	2 pilots, 2 crew chief
Armament:	two 7.62 mm machine guns	two 7.62 mm machine guns
Payload:	2,640 lb (or 11 combat equipped troops)	2,640 lb (or 11 combat-equipped troops)
External load:	8,000 lb	9,000 lb

FOREIGN COUNTERPART:	France: Puma; NH90	Russia: HIP series aircraft
	United Kingdom: Lynx; EH-101	

FOREIGN MILITARY SALES: FMS: Bahrain, Colombia, Egypt, Saudi Arabia
Commercial Sales: Australia, Brunei, China, Hong Kong, Japan, Jordan, Mexico, Morocco, Philippines, Turkey
Co-Production: Korea

PROGRAM STATUS: The Army began fielding the UH-60 in 1978. Between 1978 and 1989 the Army procured UH-60A model aircraft. In October 1989, the power train system was upgraded, resulting in a model designation change from UH-60A to UH-60L. As of the end of FY96, the Army has procured 483 UH-60L models for a total UH-60 buy of 1463 aircraft. The Army currently is in the fifth year of a five-year, multi-year procurement contract calling for the delivery of 60 Aircraft per year.

PROJECTED ACTIVITIES: Delivery of 5 aircraft per month in accordance with the multi-year procurement contract. Continued refurbishment and standardization of pre-1989 UH-60A models to bring those airframes to the most up-to-date A model configuration. UH-60Q MEDEVAC type qualification is in progress and is to be completed in FY98. Contract for delivery of 34 additional aircraft and 4 UH-60Q kits from FY97 appropriation.

PRIME CONTRACTOR: United Technologies (Sikorsky Aircraft) (Stratford, CT); General Electric (Lynn, MA)

* See appendix for list of subcontractors.



Majestic & Sustain

EMD

MISSION: The only U.S. Army cargo helicopter, the mission of the CH-47D Chinook/Improved Cargo Helicopter (ICH) will be to transport weapons, ammunition, equipment, troops and other cargo in general support of combat units and operations other than war.

CHARACTERISTICS: The CH-47D Chinook/ICH will be similar to the CH-47D Chinook with the following exceptions: The cockpit will be upgraded to a new electronic architecture which will allow seamless interface with other systems on the digital battlefield; the airframe will be modified with active and passive systems to reduce vibration, and in turn, reduce fleet O&S costs. These aircraft will also have the advantage of a more powerful and reliable T55-GA-714A turboshaft engine as the result of a separate CH-47D Chinook engine upgrade program. Options to improve cargo handling and survivability may be possible based on availability of funding. The CH-47D Chinook/ICH will be a Corps asset.

Max Gross Weight:	50,000 lbs
Max Cruise Speed:	160 knots
Troop Capacity:	33
Litter Capacity:	24
Sling-load Capacity:	26,000 lbs center hook 17,000 lbs forward/aft hook 25,000 lbs tandem
Minimum Crew:	3

FOREIGN COUNTERPART: No known foreign counterpart.

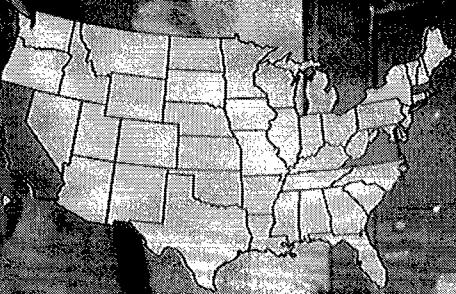
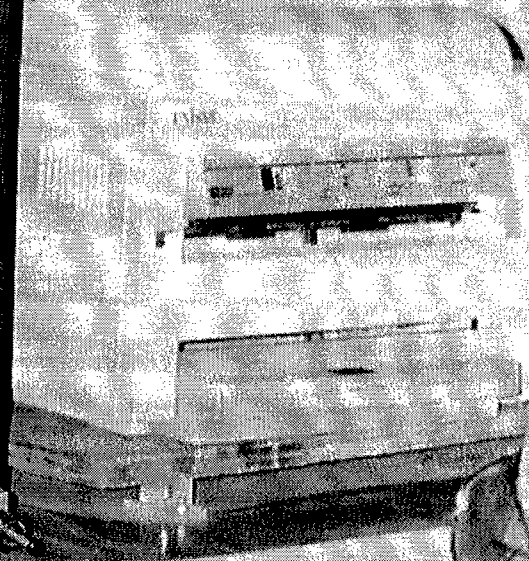
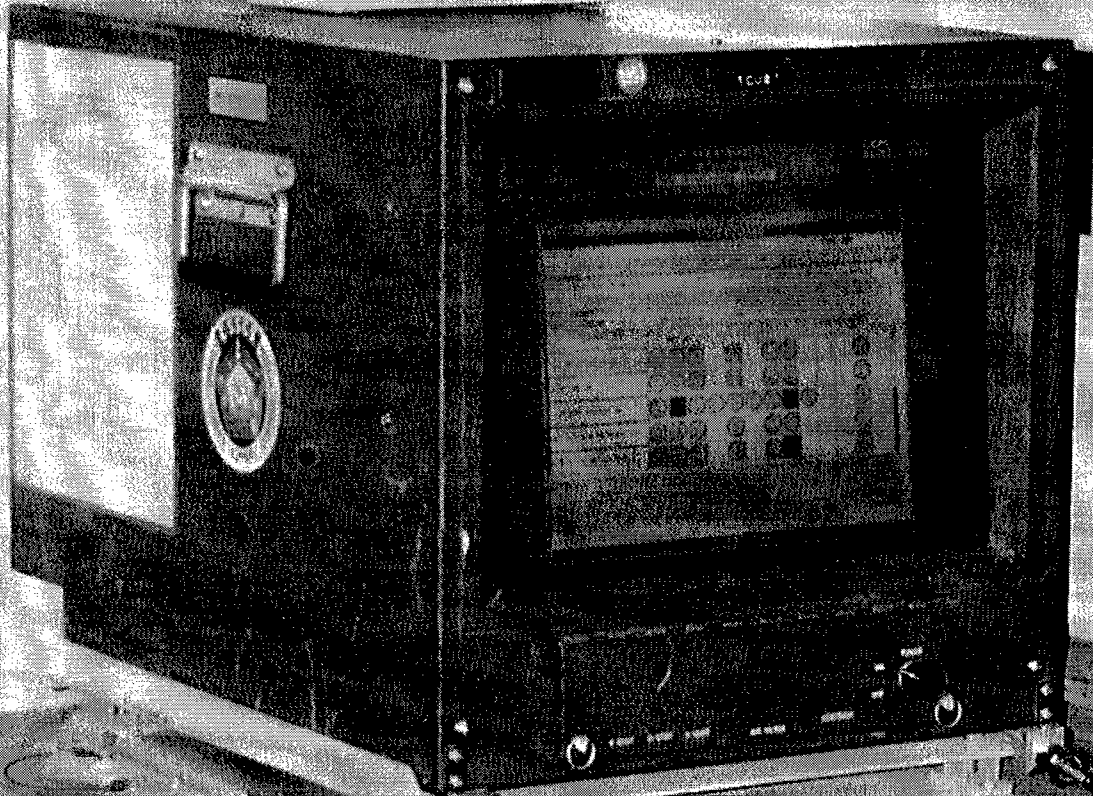
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The CH-47D Chinook/ICH is fully funded in the FY98-03 Program Objective Memorandum. Additional RDT&E plus-ups in FY97 will allow for program continuity and an FY97 start to achieve first delivery in FY02 and a first unit equipped in FY04.

PROJECTED ACTIVITIES: Concept formulation studies will be completed in early FY97. Risk reduction flight tests with passive vibration reduction modifications are currently ongoing. Additional flight tests with active vibration reduction systems and upgraded powerplants will begin in mid-FY97.

PRIME CONTRACTOR: Allied Signal (Phoenix, AZ)
Boeing (Philadelphia, PA)

*See appendix for list of subcontractors.



Project & Sustain

Win the Information War

EMD

MISSION: The Combat Service Support Control System (CSSCS) will provide timely situational awareness and force projection information to determine capability to support current operations and sustain future operations. The CSSCS will rapidly collect, store, analyze, and disseminate critical logistics, medical, financial and personnel information.

CHARACTERISTICS: The CSSCS is a computer software system designed to assist commanders and their staffs in the planning and execution of logistics operations. CSS commanders and staffs are currently participating in the force-level planning and decision making processes through a manual effort of gathering, correlating, and analyzing volumes of technical data from the existing Standard Army Management Information Systems (STAMIS). The CSSCS can extract summary information from the CSS STAMIS, accept input from other elements of the CSS community, and exchange information with other automated systems to evaluate CSS information with respect to the force-level commander's tactical courses of actions. The CSSCS is the combat service support component of the Army Battle Command System (ABCS). The CSSCS will be organic to CSS units and headquarters staffs within the maneuver brigades, separate brigades, armored cavalry regiments, Divisions, Corps, and Echelons Above Corps (EAC). The CSSCS will be comprised of computer units procured through the Project Manager [Common Hardware/Software (PM CHS)], [Common Operating Environment (COE)] Software and CSSCS-unique software. The CSSCS will be housed in the family of Standardized Integrated Command Post Systems provided by PM CHS.

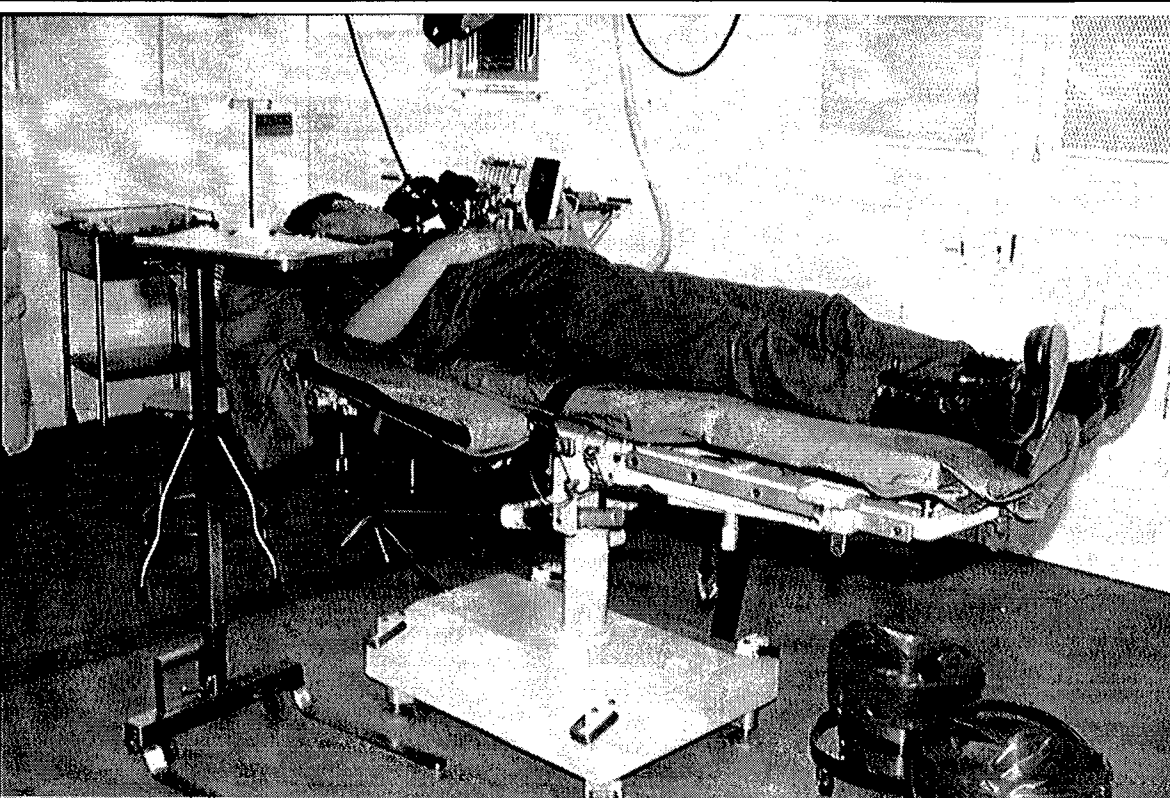
FOREIGN COUNTERPART: PM CSSCS participates actively with Germany, France and Great Britain in the Quadrilateral Army Communications Information Systems Interoperability Group. Additionally, Canada and Australia are monitoring the status of CSSCS development.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The CSSCS is currently in the Engineering and Manufacturing Development, with low-rate initial production authority. Program development has been structured to evolve over five versions. Versions 1 and 2 served as proof of principle, and provided initial division level CSS functional capability on common hardware. Version 3 builds on the capabilities of the previous versions and provides an Initial Operational Capability at Division and Corps level, to include initial horizontal interoperability with ABCS systems. Version 4 will extend CSSCS to EAC, as well as provide added capabilities. Version 5, the objective CSSCS software, will extend CSSCS capabilities to joint, allied, and coalition forces.

PROJECTED ACTIVITIES: ASARC III (Full Production), 2QFY97.
First Unit Equipped, June 1997.

PRIME CONTRACTOR: LMC (Springfield, VA) Versions 4-5 1995-1999
TRW (Carson, CA) Versions 1-3 1991-1997



MISSION: The Deployable Medical Systems (DEPMEDS) family provides deployable hospitals with standard medical care equipment.

CHARACTERISTICS: The DEPMEDS family is composed of medical equipment packaged into standardized modules for use by all Services. There are four types of deployable Army hospitals under the Army's Medical Force 2000 reorganization: forward-deployed Mobile Army Surgical Hospitals, Combat Support Hospitals, Field Hospitals, and General Hospitals. Each will comprise different configurations of standard DEPMEDS modules, such as operating rooms, laboratories, x-ray units, and wards. The DEPMEDS hospital sets standardize the use throughout the Army and DoD of the latest medical technology and equipment, expendable supplies, major nonmedical support equipment power units, Tent Extendible Modular Personnel Tents, tactical shelters, heating, and air conditioning. Standard modules improve medical operability and patient distribution. The hospital sets can be deployed under all climatic conditions. Fielding the 88 Army hospital sets will eliminate serious shortages of field medical equipment and achieve major advances in equipping the Total Army. Gaining units will receive their DEPMEDS equipment in one package under the Total Package Fielding concept. This is the largest Total Package Fielding effort ever undertaken by the Army Medical Department.

System characteristics vary by type of hospital set. All provide adequate but austere care, are maintainable and relocatable, have modular configuration and quad-service compatibility, and are transportable by strategic air.

FOREIGN COUNTERPART: No known foreign counterpart.

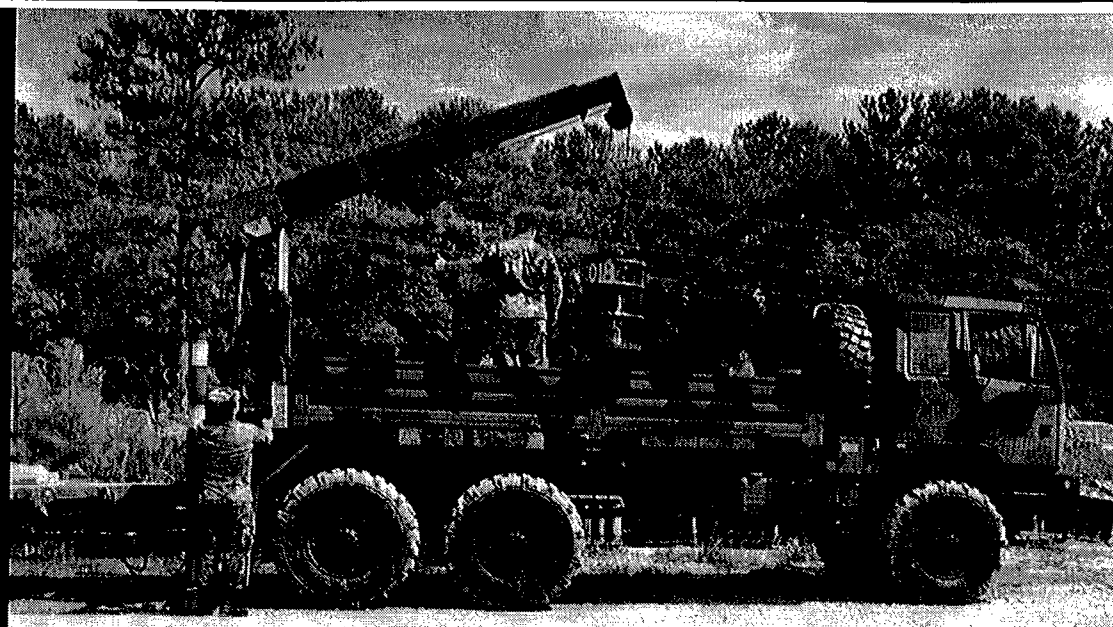
FOREIGN MILITARY SALES: Six Mobile Army Surgical Hospitals (MASH) units were sold to Saudi Arabia during Operation Desert Storm.

PROGRAM STATUS: The DoD Medical Standardization Board ensures compatibility among the Services. Fielding began in 4QFY87. As of September 1996, 68 hospitals had been fielded and 96 minimum essential equipment sets have been fielded.

PROJECTED ACTIVITIES: During FY97, the systems will be modernized in keeping with upgraded and changing medical technology.

PRIME CONTRACTOR: A large number of contractors are involved in providing the 3,400-plus medical and non-medical components of DEPMEDS. These components are assembled into modules and hospital sets by the Defense Logistics Agency, Defense Depot, Ogden, UT.

* See appendix for list of subcontractors.



PRODUCTION AND DEPLOYMENT

MISSION: The Family of Medium Tactical Vehicles (FMTV) will fill the Army's medium tactical wheeled vehicle requirements.

CHARACTERISTICS: The FMTV consists of a common truck chassis that is used for several vehicle configuration in two payload classes. The Light Medium Tactical Vehicle (LMTV) is available in van and cargo variants and has a 2 1/2-ton payload capacity. The Medium Tactical Vehicle (MTV) has a 5-ton payload capacity and consists of the following models: cargo with and without materiel-handling equipment, tractor, wrecker, and dump truck. Van and tanker variants of the MTV will be developed concurrent with the production of other models. The FMTV will perform line haul, local haul, unit mobility, unit resupply and other missions in combat, combat support, and combat service support units. Vehicles will operate worldwide on primary and secondary roads and trails. The FMTV will replace overaged and maintenance-intensive trucks currently in the fleet.

	LMTV Cargo	MTV Cargo
Payload:	5,000 lb	10,000 lb
Towed load:	7,500 lb	21,000 lb
Engine:	Diesel	Diesel
Transmission:	Automatic	Automatic
Horsepower:	225	290
Drive:	4x4	6x6
FOREIGN COUNTERPARTS:	LMTV	MTV
Austria:	Steyr 630M3	Steyr 1291M
France:	RVI Saviem TRM-2000	RVI Saviem TRM-4000
Germany:	Unimog U1100L	Mercedes 1017A, MAN 5-ton
Italy:	Fiat 75PM	Fiat 6602
Russia:	ZIL-131; GAZ-66	URAL-375; 6A2 9301; KAW 4430 (same as 5-ton)
Spain:	Santana 2000	Peguso 3050

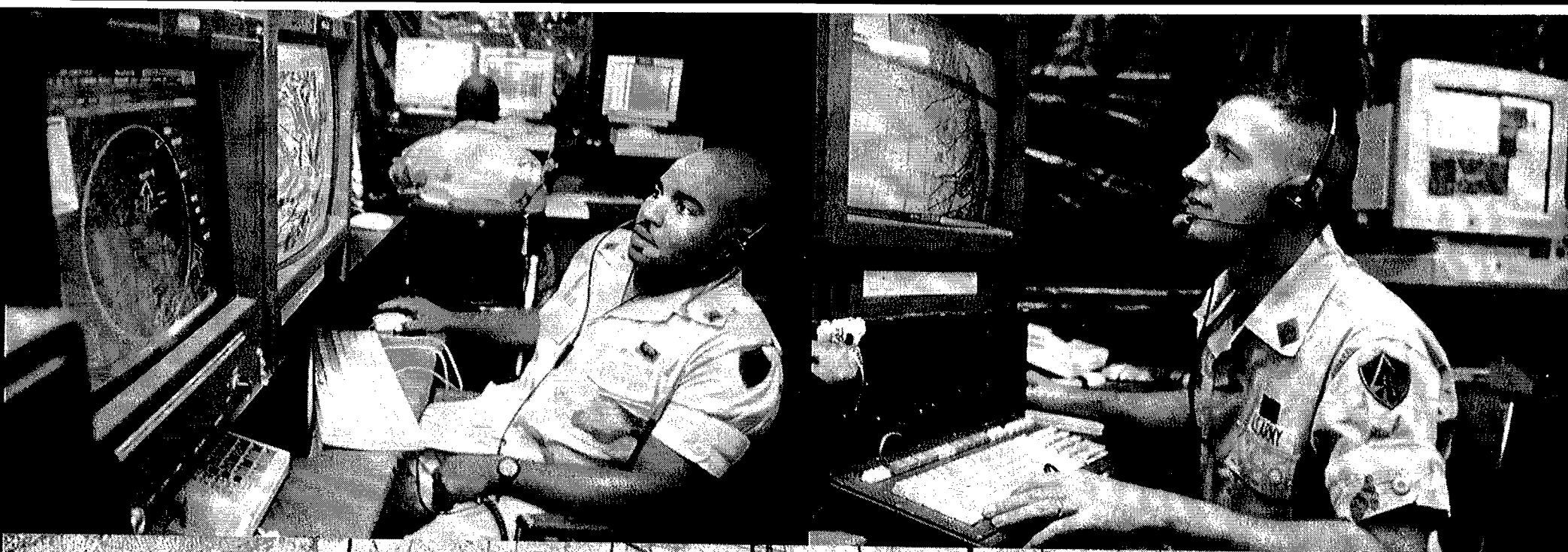
FOREIGN MILITARY SALES: Saudi Arabia and Thailand have FMS actions in progress.

PROGRAM STATUS: First unit equipped was at Ft. Bragg, NC on 30 January 1996. Units at Ft. Campbell, KY have also received the FMTV. A letter contract was awarded to Stewart and Stevenson Services on 23 August 1996 to complete the 5th program year of the original contract.

PROJECTED ACTIVITIES: Fielding continues to the Army's highest priority "first-to-fight" units.

PRIME CONTRACTOR: Stewart and Stevenson Services (Houston, TX)

* See appendix for list of subcontractors.



MISSION: The Force Projection Tactical Operations Center (FP TOC) provides the Joint Force Land Component Commander with a digitized command and control capability to integrate and synchronize the four operational elements of Theater Missile Defense (TMD) (attack operations, active and passive defense, and Battle Management Command, Control, Communications, Computers and Intelligence) to defeat the Theater Missile threat.

CHARACTERISTICS: The FP TOC is a command and control (C2) system of systems, functionally integrating existing and evolving Army Battle Command System (ABCS), Global Command and Control System (GCCS), and TMD BMC4I specific applications. Staffed by the Army Theater Missile Defense Element (ATMDE), the FP TOC integrates and synchronizes the Joint Force Land Component Commander's (JFLCC) TMD fight. The FP TOC is a mobile digitized information and C2 center, consisting of five High Mobility Multi-Purpose Wheeled Vehicles with Standard Integrated Command Post System shelters providing the ATMDE the capability to plan, coordinate, deconflict, monitor, and execute the JFLCC's TMD operations to counter the Theater Missile threat. The FP TOC receives, filters, processes, disseminates, accesses, correlates and displays TMD information through 13 fielded and/or developmental Army and Joint command, control, and communication systems. The FP TOC is the only C2 center that is compatible with Distributive Interactive Simulation (DIS) protocols allowing the ATMDE to conduct training in a Synthetic Battlefield Environment. The FP TOC's primary functions are: Intelligence, Preparation of the Battlefield, Situational Awareness and Battlefield Visualization, Vulnerability Assessments, Localized Missile Attack Warning, Early Entry C2 for TMD capability assets, Sensor Cross-Cueing, Defense Designs and Joint Theater Communications Interfaces.

FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The FP TOC was fielded to the Army in February 1995. The FP TOC has demonstrated its value-added to integrate and synchronize TMD during Roving Sands 95 and 96, the TMD Army Warfighting Experiment 95, Ulchi Focus Lens 95 and 96 and numerous other CINC exercises. The FP TOC set the standard for joint interoperability during the Joint Warfighting Interoperability Demonstration 95. The FP TOC established interfaces between its various BMC4I systems and with the Air Force's Combat Integration Center to receive and disseminate time sensitive TMD intelligence and operational products. During February 1996, the FP TOC was upgraded during Phase II. The Phase II upgrades added a new communication vehicle to consolidate voice communications; added new workstations and improved existing workstations; replaced CHS I equipment with CHS II; and upgrades provided a distributed computing environment and a standardized message formatting capability.

PROJECTED ACTIVITIES: FP TOC BMC4I systems upgrades and fielding additional FP TOC. The FP TOC will participate in Roving Sands 97 and Joint Project Optic Cobra 97, and Ulchi Focus Lens 97.

PRIME CONTRACTOR: TRW Inc. (Dominguez Hills, CA)

MISSION: The Force Provider (FP) will provide high quality of life rest and refit facilities for combat soldiers in theater of operations with limited or no supporting infrastructure.

CHARACTERISTICS: The FP is a high quality tent-based troop support system with selected containerized components which provides climate controlled billeting, feeding, hygiene services, and morale, welfare and recreation services. It was a non-developmental item engineering and integration effort. The components consist of existing DoD equipment to the maximum extent possible. Equipment for this system includes tent-based billeting, dining facilities, showers, and containerized latrines and laundries. FP also includes power generation and distribution equipment; morale, welfare, and recreation equipment; area lighting; water and fuel storage and distribution; and waste water storage. Additionally, FP supports bare base theater of operation reception, reconstitution, humanitarian aid, and disaster relief missions. It is packaged and containerized for ease of deployability by all modes of transportation.

FOREIGN COUNTERPART: Germany: Feld Lager System—Concept Phase

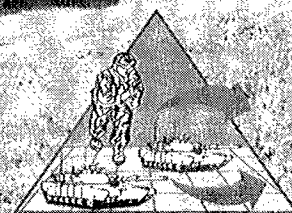
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: FP was type classified standard on 12 May 1996.
 Delivery of first two modules December 1996.
 Delivery of two modules December 1997.
 Preplanned product improvements for containerized batch laundry and latrine systems completed September 1996.
 Six interim support package modules (ISP#2) deployed to Operation Joint Endeavor and supported over 5000 troops with high quality life support.

PROJECTED ACTIVITIES: Major item contract and secondary item deliveries continuous and on schedule.
 System integration and assembly ongoing for FY97/98.

PRIME CONTRACTOR: FY97/98 production assembly by Tobyhanna Army Depot with system integration by the Force Provider Program Management Office.

* See appendix for list of major subcontractors.



PRODUCTION AND DEPLOYMENT

MISSION: The Heavy Equipment Transporter System (HETS) deploys, transports, recovers, and evacuates a combat-loaded M1 series tank or other vehicles of similar weight.

CHARACTERISTICS: The HETS consists of the M1070 truck tractor and M1000 semitrailer (70 ton). They are being procured under separate acquisition programs. The new HETS transports 70-ton payloads, primarily M1 series tanks. It operates on OCONUS highways, on CONUS highways with permits, secondary roads, and cross country. The HETS has a number of features that significantly improve the mobility and overall performance of the system in a tactical environment. The M1070 tractor has front- and rear-axle steering, a central tire inflation system, and cab space for six personnel to accommodate the two HETS operators and four tank crewmen. The M1000 semitrailer has automatically steerable axles and a load-leveling hydraulic suspension.

Speed: 40-45 mph on highway (25-30 mph with 70 ton payload)

Range: 300 miles

Transport: C-5 and C-17 aircraft

Mobility: 95% on road; 5% off road

RAM: 3,000 mean miles between hardware mission failure for both tractor and trailer

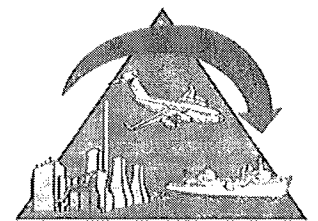
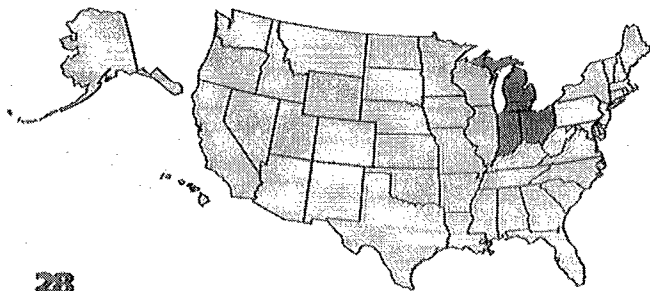
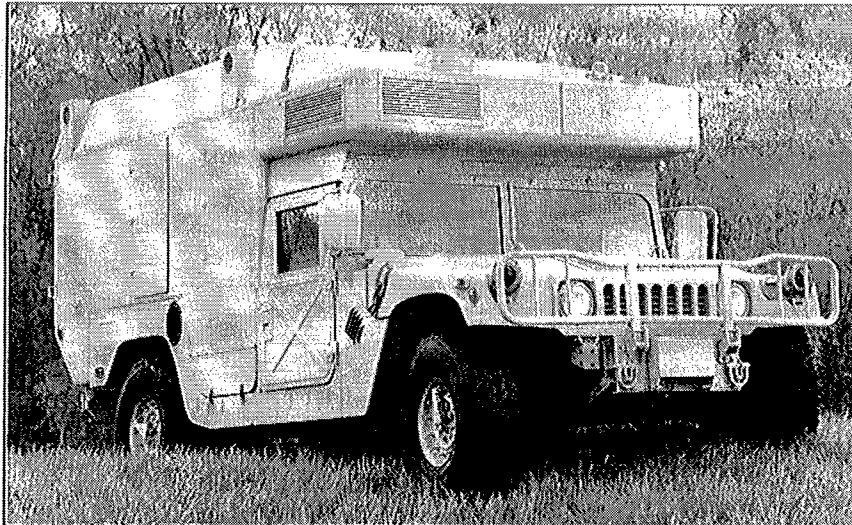
FOREIGN COUNTERPART: France: TRH 350 Russia: TATRA-813 (tractor)/ChMZAP-5212 (trailer)

FOREIGN MILITARY SALES: Israel has a letter of requirement for the trailer only, but no sale yet.

PROGRAM STATUS: The HETS is being procured as a non-developmental item and is approved for full rate production. Oshkosh Truck Corporation is producing the tractor. The trailer is being produced by Systems & Electronics, Inc. First unit equipped occurred on 3 June 1994 with the 27th Main Support Battalion (MSB), 1st Cavalry Division at Ft. Hood, Texas. HETS fielding will continue through FY97 as currently funded and FY99 if contract options are exercised.

PROJECTED ACTIVITIES: Fielding through FY97 (FY99 if contract options are exercised). Procurement of an additional 182 systems in FY97.

PRIME CONTRACTOR: Tractor: Oshkosh Truck (Oshkosh, WI)
Trailer: Systems & Electronics, Inc. (St. Louis, MO)



MISSION: The High Mobility Multipurpose Wheeled Vehicle (HMMWV) provides a common light tactical vehicle capability.

CHARACTERISTICS: The HMMWV is a light, highly mobile, diesel-powered, four-wheel drive vehicle that uses a common 4,400 lbs payload chassis. The HMMWV can be configured through the use of common components and kits to become a troop carrier, armament carrier, S250 shelter carrier, ambulance, TOW missile carrier and a Scout vehicle. The 4,400 lbs variant was developed as the prime mover for the light howitzer, towed VULCAN system, and heavier shelter carriers. It is a Tri-Service program that also provides vehicles to satisfy Marine and Air Force requirements. The HMMWV program is complementary to the Commercial Utility Cargo Vehicle. The HMMWV replaced the 1/4 ton Jeep, the M718A1 Ambulance, 1/2 ton Mule, 1 1/4 Gamma Goat, and M792 Ambulance.

Since its inception the HMMWV has undergone numerous design and configuration updates and changes. These changes have included technological, environmental, operational and safety improvements such as higher payload capability, radial tires, 1994 EPA emissions update, commercial bucket seats, three-point seat belts, four speed transmissions and, in some cases, turbo charged engines, air conditioning and central tire inflation systems. In response to peace keeping missions, an Up-armored HMMWV was developed that provided increased ballistic and blast protection primarily for the Military Police (MP). In addition, the Project Manager (PM) developed a Scout HMMWV which is configured with a night vision device, a global positioning system, gun mounts and SINCGARS radios.

In 1995, the PM introduced the A2 configuration and the Expanded Capacity Vehicle (ECV) HMMWV. The A2 incorporates the four speed, electronic transmission, the 6.5 liter diesel engine and improvements in transportability. The A2 serves as a platform for other Army systems such as the Ground Based Common Sensor. The ECV vehicle also went into production in 1995. The payload of this vehicle will approach 5000 lbs. Its primary mission is that of an Up-armored vehicle for the Scouts and the MP. Also, this vehicle will serve as a platform for mission payloads and systems that exceed 4,400 lbs.

FOREIGN COUNTERPART: Certain models of the HMMWV have counterparts such as the Swiss MOWAG, the French PANHARD and the German UNIMOG.

FOREIGN MILITARY SALES: The HMMWV has been sold through FMS to 29 countries.

PROGRAM STATUS: Continued production on the requirements contract.

PROJECTED ACTIVITIES: Continued fielding as a platform in support of MP, Scouts and other Army systems.

PRIME CONTRACTOR: AM General (South Bend, IN)

* See appendix for list of subcontractors.



MISSION: The Integrated Family of Test Equipment (IFTE) provides the capability to isolate electronic faults in weapon systems.

CHARACTERISTICS: The IFTE is a modular Test, Measurement, and Diagnostic Equipment (TMDE) system that consists of four interrelated systems to provide general purpose, standard automatic test equipment (ATE) capability through all levels of maintenance. It allows the isolation of weapon systems faults to the Line Replaceable Unit (LRU) at the Organizational and Direct Support (DS) levels of maintenance, both on and off system. This supports rapid return to the battlefield. At General Support (GS) and Depot levels of maintenance, IFTE further diagnoses an LRU to the Shop Replaceable Unit (SRU).

Two tactical systems, the AN/PSM-80 Contact Test Set (CTS), and the AN/TSM-191 Base Shop Test Facility (BSTF), provide on- and off-system support, respectively. The CTS is also the host for Electronic Technical Manuals (ETMs) and interactive ETMs. The CTS is man-portable and augments supported systems Built-in-Test/Built-in-Test-Equipment (BIT/BITE) to isolate weapon systems failures to the bad LRU. The BSTF consists of the AN/USM-632 Base Shop Test Station (BSTS) in an S-280 shelter mounted on a 5-ton truck. A second shelter and truck store Test Program Sets (TPSs). TPSs are the weapon systems-specific software that the ATE uses to diagnose faults in major items or components. A 60 kW generator powers the BSTF. Base Shops serve at both DS and GS levels. The Commercial Equivalent Equipment (CEE) is a non-tactical, non-ruggedized equivalent of the BSTF, designed for completion TPS development and to support requirements at depots, contractor facilities, and Special Repair Activities. The Electro-Optic Test Facility (EOTF) is under development to provide an off-system electro-optic test capability at the DS and GS levels. The EOTF will be housed in an S-280 shelter mounted on a 5 ton truck and will be powered by a 60 kW generator.

FOREIGN COUNTERPART: No known foreign counterpart.

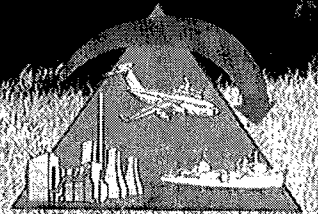
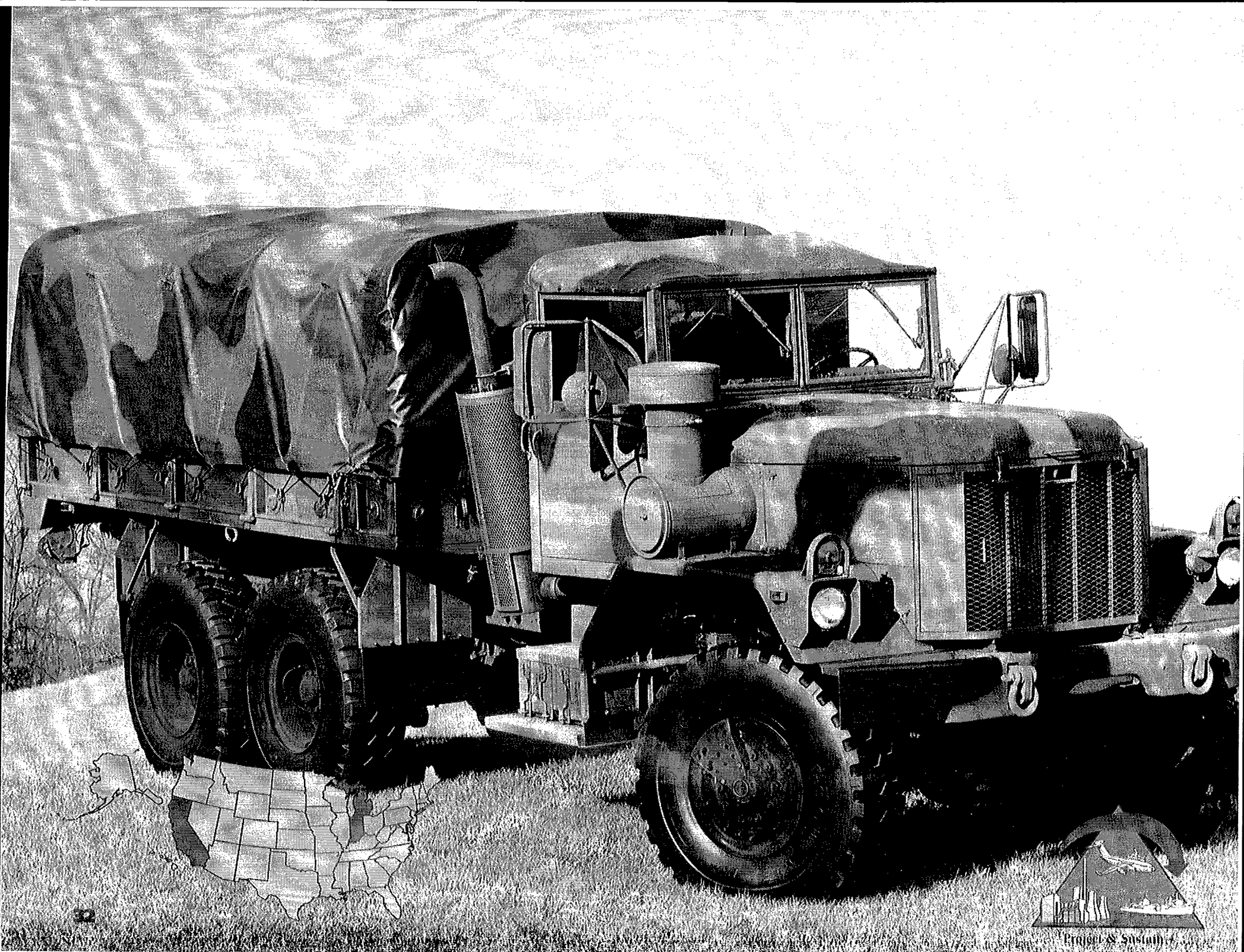
FOREIGN MILITARY SALES: Argentina, Denmark, Egypt, Greece, Israel, Korea, Kuwait, NAMSA, Norway, Organization of African Unity, Saudi Arabia, Taiwan, Thailand.

PROGRAM STATUS: The IFTE BSTF full-scale production decision took place in March 1992. Improvements identified at initial operational test and evaluation are being retrofitted to all BSTFs. First Unit Equipped (FUE) for the BSTF occurred in December 1992. FUE for the CTS occurred in September 1994.

PROJECTED ACTIVITIES: The BSTF and the CTS (SPORT) will be procured and fielded in FY97. Development of the EOTF will continue through FY97.

PRIME CONTRACTOR: BSTF/CEE/EOTF: Northrop-Grumman (Great River, NY)
CTS: SAIC (San Diego, CA)
CTS (SPORT): Miltope Corp. (Hope Hall, AL)

* See appendix for list of subcontractors.



PRODUCTION AND DEPLOYMENT

MISSION: The Medium Truck Remanufacture or Extended Service Program (ESP) vehicles perform local haul, resupply, mobility and other missions for combat, combat support and combat service units. Both of these programs complement the FMTV program.

CHARACTERISTICS: After remanufacture the 2 1/2 ton ESP truck receives a new serial number and registration number. Three vehicles are provided for every two new ones produced. Old vehicles are completely disassembled and reusable parts are reworked as required. New trucks are reassembled on a new production line using a combination of the reworked parts and a significant number of new parts and components. Some of the features of the ESP vehicles are as follows: a new Caterpillar 3116 diesel engine meeting CY93 EPA emission standards, a new Allison 1545 automatic transmission, a new cooling system, reworked Rockwell axles and transfer case, new electronically controlled central tire inflation system, Michelin super single radial tires, power assist steering, an improved independent circuit air/hydraulic brake system, three point seat belts, a new ergonomically designed driver's seat, electronic windshield wipers and washer and a new, improved heater and defroster system. The Army envisions similar system improvements on the 5 ton ESP truck.

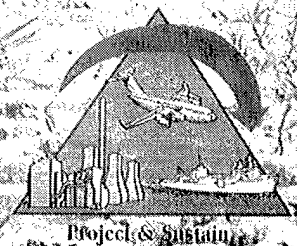
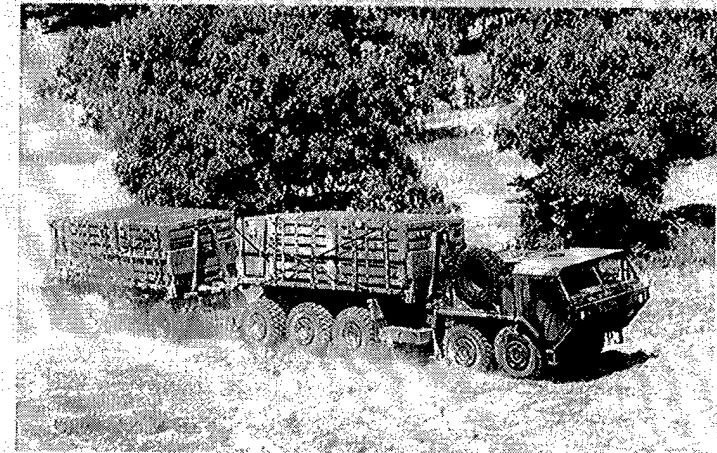
FOREIGN COUNTERPART: See the FMTV listing.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The 2 1/2 ton truck is in production.
The 5 ton ESP truck is in the EMD phase jointly with the USMC's Medium Tactical Vehicle Remanufacture (MTVR) program.

PROJECTED ACTIVITIES: The 2 1/2 ton ESP truck will continue fielding.
The 5 ton ESP truck will produce and test Army and USMC prototypes.

PRIME CONTRACTOR: The 2 1/2 ton ESP truck: AM General (South Bend, IN)
The 5 ton ESP truck: TBD



MISSION: The Palletized Load System (PLS) is being deployed as the primary component of the maneuver-oriented ammunition distribution system (MOADS). It will perform line haul, local haul, unit resupply and other missions in the tactical environment to support modernized and highly mobile combat units.

CHARACTERISTICS: The PLS consists of a 16 1/2-ton payload prime mover (10x10) with an integral load-handling system, which provides self-loading and unloading capability; a 16 1/2-ton payload trailer; and demountable cargo beds, referred to as flatracks. The PLS truck is equipped with the central tire inflation system, which significantly improves off-road mobility. PLS maintains interoperability with the comparable British, German, and French systems, through the use of a common flatrack, as specified in the current quadripartite agreement. On the basis of direction provided by Congress in the FY90 Defense Appropriation Bill, an intermodal flatrack (with features that enhance transportability and stacking) has completed design and is in production (5,000 M1 Flatracks). A container lift kit also will be fielded to PLS trucks assigned to transportation and ammunition units and to forward support battalions. This provides PLS the capability to pick up and transport 20 ft ISO containers without using a flatrack. The self-propelled field artillery units will receive PLS trucks equipped with a materiel-handling crane to deal with individual pallets of ammunition.

Truck payload:	16 1/2 ton
Trailer payload:	16 1/2 ton
Flatrack dimensions:	8x20 ft
Engine type:	Diesel
Transmission:	Automatic
Number of driven wheels:	10
Range, integral fuel at gross combined weight:	255 mi

FOREIGN COUNTERPART: United Kingdom: Demountable Rack Off-Loading and Pick-Up System

FOREIGN MILITARY SALES: No foreign military sales.

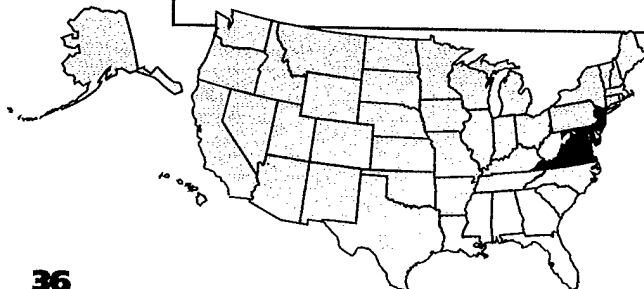
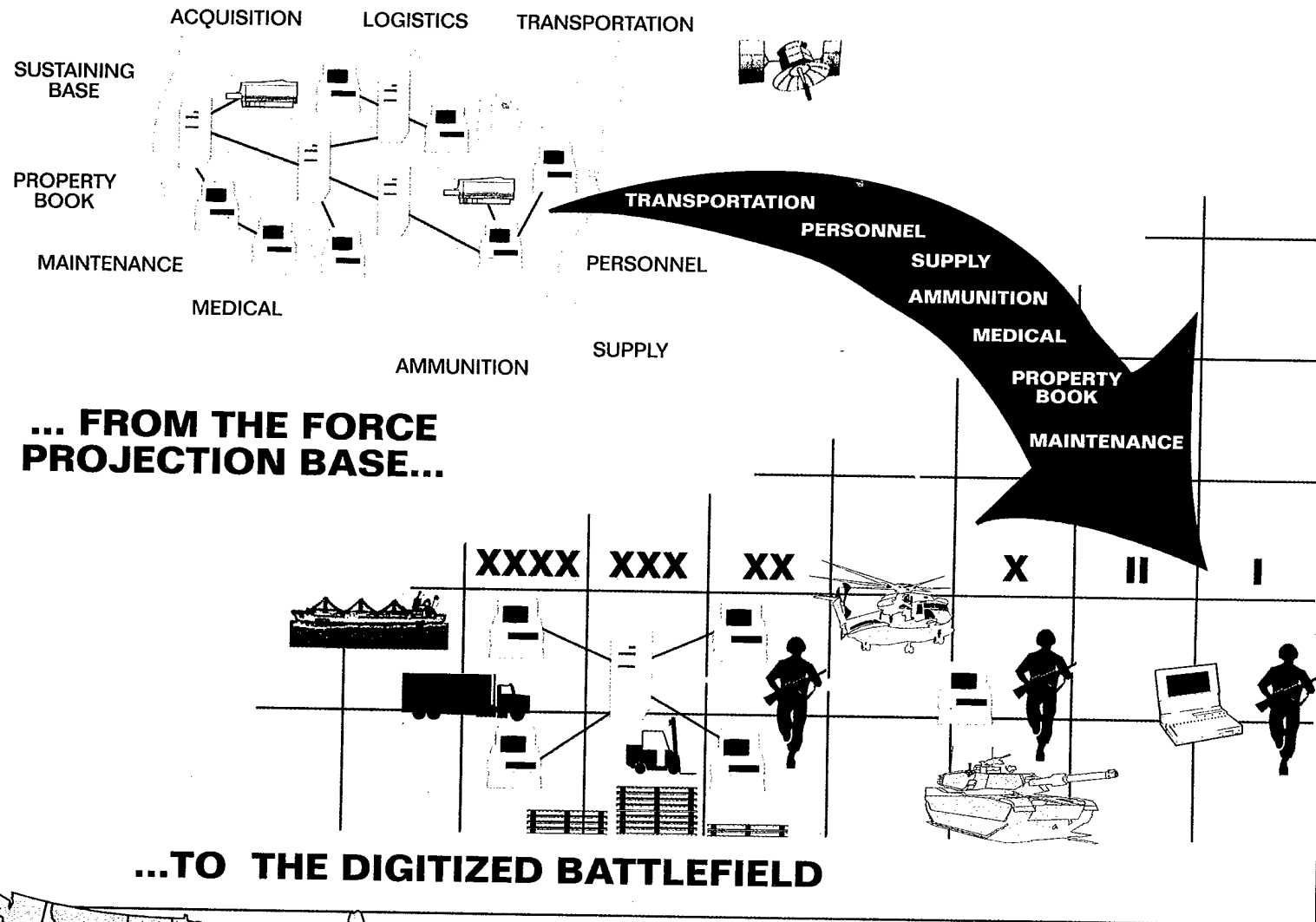
PROGRAM STATUS: The PLS is a non-developmental item program which has been executed through a five-year multi-year production contract awarded to Oshkosh Truck Corporation in September 1990. It entered low rate production in 1991 and was approved to enter full production in April 1993. The PLS first unit equipped occurred in February 1994 with units from the 1st Cavalry Division at Ft. Hood, TX. PLS fielding will continue through FY97.

PROJECTED ACTIVITIES: TRADOC is currently performing an analysis of follow-on uses for the PLS. The study explores the benefits of using PLS for the following missions: Corps distribution of other classes of supply, DEPMEDS Hospital and Medical Supplies, Aviation Intermediate Maintenance Units in Division/Corps, and Engineer Bridging. The PMO is currently developing tanker flatracks to transport water and fuel per Congressional direction and will soon begin the development of engineering application flatracks. The PLS will be used as the launcher for the Theater High Altitude Area Defense (THAAD) and as the transporter for the Heavy Dry Support Bridge (HDSB).

PRIME CONTRACTOR: Oshkosh Truck (Oshkosh, WI)

* See appendix for list of subcontractors.

WARFIGHTER SUPPORT...



PRODUCTION AND DEPLOYMENT

MISSION: To plan, design, develop, acquire, install, and maintain highly complex management information systems to support the warfighter from the force projection base to the battlefield.

CHARACTERISTICS: The Standard Army Management Information Systems (STAMIS) programs acquired by PEO STAMIS are diverse based on the size and variety of products (computer hardware and software systems) and the breadth of customers. Programs include: Standard Installation/Division Personnel System (SIDPERS); Joint Recruiting Information Support System (JRISS); Personnel Electronic Records Management Systems (PERMS); Joint Computer-aided Acquisition and Logistic Support (JCALS); Sustaining Base Information Services (SBIS); Acquisition Information Management (AIM); Department of the Army Movements Management System (DAMMS); Objective Supply Capability (OSC); Standard Army Ammunition System (SAAS); Standard Army Maintenance System (SAAS); Standard Army Maintenance System (SAMS); Standard Army Retail Supply System (SARSS); Standard Property Book System (SPBS); and Unit Level Logistics Systems (ULLS). The span of STAMIS programs is Defense-wide and world-wide to provide the warfighter a modern power projection platform to support peacetime operations, training, mobilization, force projection, split-based operations and redeployment. As an integral part of the Army enterprise Strategy, STAMIS programs acquire integrated systems using commercial technology that meets validated needs.

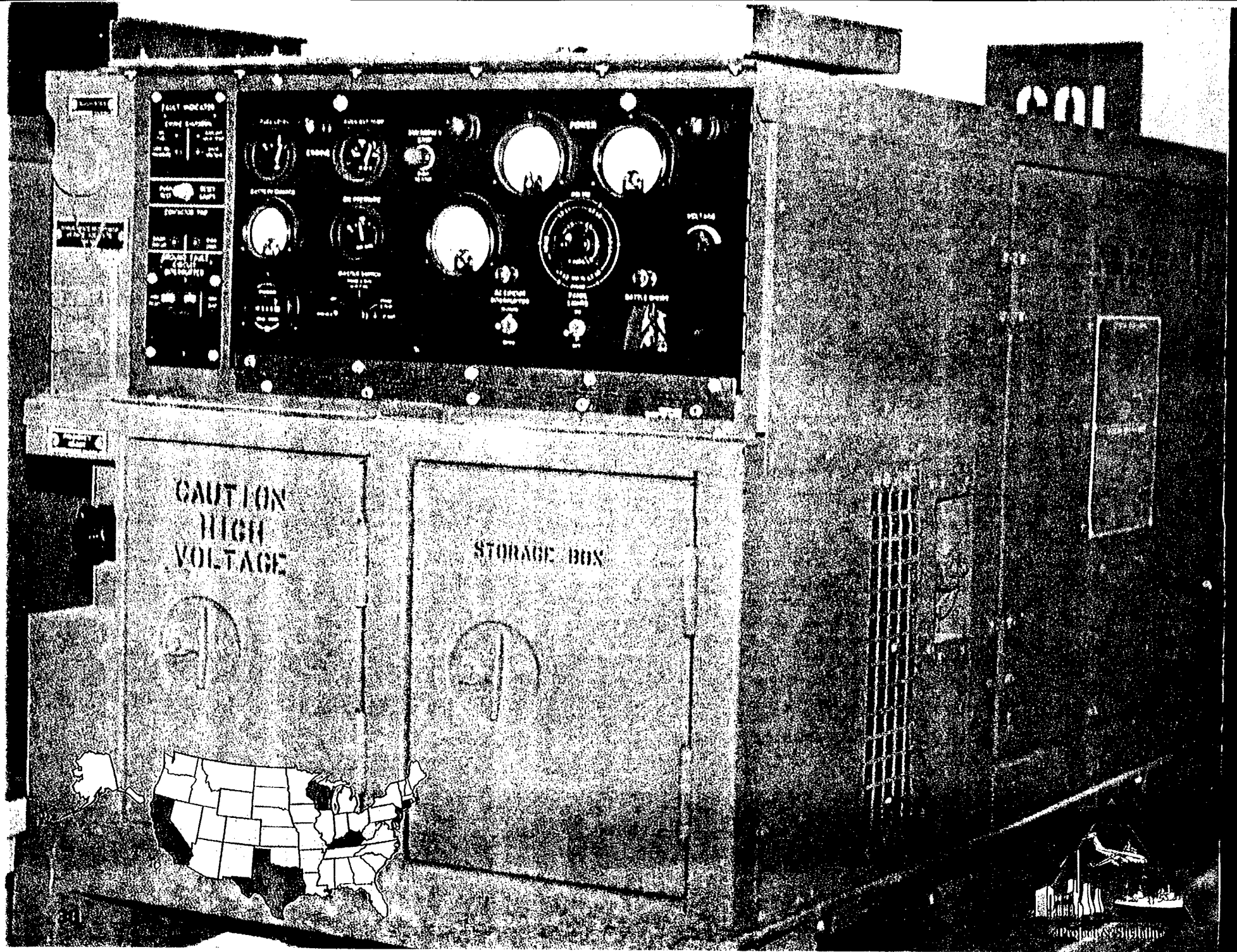
FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The STAMIS programs are at various states of life cycle management. JCALS competitively awarded an A-109 contract in December 1991; SBIS competitively awarded an A-109 contract in June 1993. Commercial off-the-shelf hardware and software, to the maximum extent possible, are used by STAMIS programs. Other STAMIS programs use various Indefinite Delivery/Indefinite Quantity contracts and/or government software development centers. PERMS has completed fielding of basic systems to the four Army records sites and enhance the systems.

PROJECTED ACTIVITIES: SBIS: Initial Operational Test & Evaluation and Milestone II/III in FY97 to commence fielding of the initial software increment. JCALS: Initial Operational Test & Evaluation and Milestone III in FY97 to fully deploy 269 DoD sites. SIDPERS: JRISS and AIM institute prototyping and complete a Milestone I. The logistics programs will continue to develop, test and field improved capabilities. SIDPERS-3: Testing of "fun" data at three sites. SIDPERS-3 will complete operational assessments and seek Milestone III approval.

CONTRACTOR: JCALS: Computer Sciences Corporation (Moorestown, NJ)
PERMS: PRC, Inc. (McLean, VA)
SBIS: Lockheed Martin (Bethesda, MD)



PRODUCTION AND DEPLOYMENT

MISSION: The Tactical Quiet Generators (TQG) provide lightweight, less detectable, and more survivable electric power to units and equipment in a field environment.

CHARACTERISTICS: The TQG are the new DoD standard family of tactical electric power sources. The 5 kW-60 kW TQG provide DoD with "single fuel" sets that are more reliable, provide improved mobility (decreased weight), reduce noise and infrared (IR) signatures, are survivable in a nuclear environment, and provide quality electric power for command posts, C3I systems, weapon systems, logistics and maintenance functions, and other battlefield support equipment. The new power generators will limit a threat force's ability to locate critical targets through reduced aural and thermal signatures.

	Current Fleet Performance	TQG Requirements
Aural signature:	79-85 dBA @25 m	70 dBA @7 m
Fuel:	GAS/DSL/JP4	JP8/DSL
Hertz:	DC 50/60/400	DC 60, 50/60, 400
HAEMP:	No	Yes
IR suppressed:	No	Yes
Reliability (MTBOMF):	140-180 hr	500-600 hr
Standard voltage connections:	Yes	Yes
Slave receptacle:	Ordnance	NATO

FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: Tactical Quiet Generators (TQGs- 5-60 kW) have been adopted as standard equipment by the Canadian military. Foreign military sales of TQGs in support of Air Defense systems have also increased in recent years.

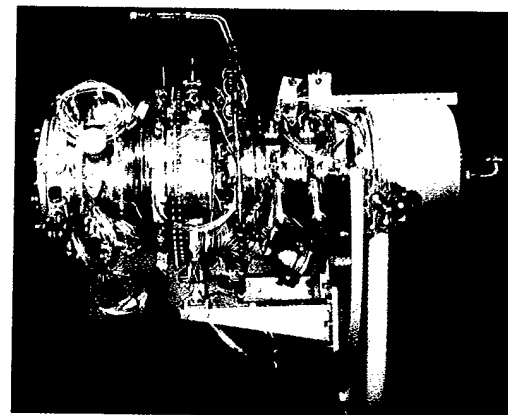
PROGRAM STATUS: The first unit equipped for the 5-60 kW was Ft. Bragg in December 1993. 5-60kW generators were fielded to Ft. Drum, Ft. Campbell, Ft. Benning, Ft. Bragg, and Aberdeen Proving Ground during FY94. During FY95, 5-60kW generators were fielded to Ft. Huachuca, Ft. Gordon, Ft. Lewis, Ft. Hood, Ft. Bliss, and Ft. Knox. During FY96, 5-60kW generators were fielded to Ft. Sill, Ft. Polk, Ft. Irwin and Ft. Riley.

PROJECTED ACTIVITIES: Fielding of generators will continue through FY02.

PRIME CONTRACTORS: 5-60kW and 3 kW TQGs: Fermont (Bridgeport, CT)
 30 and 60 kW TQG-Re-Engine: MCII (Dallas, TX)
 2 kW TQG: Dewey Electronics (Oakton, NJ)
 10 kW APU: KECO Industries (Florence, KY)
 5 kW APU and 3 kW TQG: Goodman Ball (Menlo Park, CA)
 3 kW TQG: T and J Manufacturing (Oshkosh, WI)

Integrated High Performance Turbine Engine Technology (IHPTET) (1989-2003)

The IHPTET initiative is a DoD, NASA, and industry turbine engine technology program that embodies virtually all government-sponsored research and development efforts devoted to advancing aircraft and missile turbine engines. The goal of IHPTET is to double turbine engine propulsion capability by the turn of the century. It covers both military and commercial applications in three categories: (1) man-rated thrust (fixed wing), (2) man-rated shaft (rotorcraft), and (3) expendable engines (missiles). IHPTET advancements will result from the synergistic effect of combining advanced material developments, innovative structural designs, improved aerothermodynamics, and component integration. The Army's principal contribution is in a 6.3 technology demonstrator called the Joint Turbine Advanced Gas Generator (JTAGG). JTAGG II will reduce specific fuel consumption by 30% and improve power to weight ratio by 80% over the T700 engine baseline by FY97 with additional improvements projected out to 2003. The IHPTET initiative will guide development of new aircraft and missile turbine engine technology from component development to demonstration. In this manner, advanced components and technologies should be ready for transition to weapons systems at lower technical risk and cost, provide greatly improved engine performance, and continue the civil and military excellence of the U.S. in aircraft and missile gas turbines. Supports: RAH-66 Comanche, AH-64 Apache Improvement, Joint Transport Rotorcraft.



Family of Operational Rations (FOR)



The FOR is a scenario-driven ration development program that supports highly mobile and forward deployed troops with innovative, highly acceptable components, suitable for use in arctic, jungle, desert, mountain and urban areas under all climatic conditions. The FOR represents technologically advanced food systems that consist of mobility enhancing, eat-out-of-hand components that represent an innovation to field feeding. These unique components such as sandwiches, dessert snacks and multi-functional performance enhancing components allow for eat-on-the-move capability, while providing high quality, familiar foods. Technology demonstrations have provided extremely positive feedback from soldiers and will serve as the basis for developing future rations to meet the requirements for Army Field Ration 2000. Supports: DoD Joint Food Program.

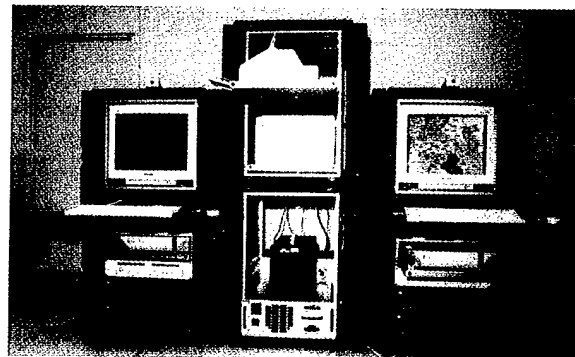
Battery Technology

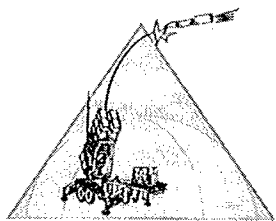
Improved lithium-ion rechargeable batteries have been designed, under a DARPA-TRP, by the CECOM-RDEC in conjunction with a contractor, and as a result there is now a domestic manufacturing capability for these batteries. In addition, the first rechargeable lithium-ion battery (BB-284/U) is now being fielded to support the Thermal Weapons Sight. These new rechargeable batteries have 2-3 times the energy density of nickel-cadmium batteries. In the field of primary batteries, prototype lithium-manganese dioxide 5590-size batteries have been designed and fabricated in conjunction with a contractor, and initial samples have 1.5-2 times the energy content of the current primary battery. Although it will take some time to work out safety and low-temperature performance issues, these have high potential for use in the future.

Intelligent Vehicles The Unmanned Ground Vehicle (UGV) technology development and demonstration program is an OSD/DARPA sponsored research and demonstration effort for which the Army Research Laboratory has been the technical manager. This program has been national in scope with the involvement of over 40 co-contractors drawn from academia, government laboratories and private industry. The continuing maturation of UGV technologies utilizing semi-autonomous vehicle navigation technologies; as well as advanced reconnaissance, surveillance, and target acquisition (RSTA); and new automated mission planning communication techniques; will provide novel tactical and support options to the future warfighter. Intelligent vehicles will give the commander the ability to multiply his force and conduct continuous combat operations. They will also generate a new capability for him to detect and target enemy forces throughout the entire battlefield. Multiple UGV-based observation platforms will provide commanders a better overview of the battlefield situation as part of the Army's Battlefield Digitization efforts. A Demo II phase of this effort was successfully concluded in June 1996 with an extensive series of field exercises coordinated with TRADOC at Fort Hood culminating in a Battle Lab Warfighting Experiment conducted by Fort Knox's Mounted Maneuver Battlespace Laboratory. Three intelligent UGVs were successfully integrated into field exercises at Fort Hood, were controlled by III Corps troops, and performed mission efforts in forward observer, maneuver on urban terrain (MOUT), reconnaissance, and security. Earlier in the program as a prelude to Demo II, a soldier controlled semi-autonomous UGV was integrated into actual Brigade-level Armored Cavalry field exercises at Fort Hood. These exercises demonstrated the potential of semi-autonomous UGVs to act as force multipliers for combat missions and their ability to extend stand-off ranges for soldiers in high risk missions. Key technologies developed during this program include: intelligent vehicle architecture, autonomous navigation, reconnaissance, surveillance, and target acquisition (RSTA), passive stereo for mobility and perception, and advanced planning tools to support tactical deployment of intelligent vehicles. The Next Generation UGV program, currently being formulated by OSD and the Army for 1997-2001, will focus on technologies providing higher speed maneuver for day/night and adverse weather operations, UGV survivability, and the effective interface of UGV derived data into the digital battlefield.

Joint Logistics ACTD (Phase I) The Joint Logistics Advanced Concept Technology Demonstration (JL-ACTD) Phase I, also known as Logistic Anchor Desk (LAD) provides operational users such as CINCs and JTF Commanders with increased capability to rapidly plan and execute more responsive and efficient logistics support to military operations. A prototype network of workstations connect operational planners and logisticians across military services and command echelons, enabling a better understanding of the impact of information technology to increase the effectiveness and efficiency of military logistics for a twenty-first century force.

The focus of LAD is decision support tools with core functionalities that include advanced data distribution and visualization techniques to provide a common, relevant logistics picture. Integration of existing logistics analysis models with knowledge-based tools provide powerful decision support to leaders. This capability is a plus to the total asset visibility effort. In October 1995, senior logisticians in Europe requested LAD support for the Operation Joint Endeavor crisis action planning underway for deployment into Bosnia. Since then LAD sites have been providing increased operational capabilities to senior logisticians and their staffs over a variety of operational issues in EUROM, USACOM, CENTCOM and supporting sites.





Army forces require improved protection against a wide variety of threats on the future battlefield. The threat posed by the growing proliferation of tactical ballistic missiles (TBMs) and nuclear, chemical and biological (NBC) weapon technology has drawn the greatest attention. The Army is investing in a mix of active and passive defense systems to deal with the TBM/NBC threat. Patriot, THAAD and MEADS are the core of Army active defense systems, which will protect the force against TBMs and other airborne threats such as cruise missiles and aircraft. Passive defense centers around systems that can detect or offer passive protection against nuclear, chemical and biological agents. This includes detection systems like the NBC Reconnaissance System – Fox and the Biological Integrated Detection System (BIDS). It also includes items like the M40 series protective mask and the Advanced Integrated Collective Protection System that offer soldiers protection from dangerous airborne agents.

The Army is also concerned about the dangers posed by advanced conventional weapons and by fratricide. To counter the former, the Army is developing lighter and stronger ballistic protection for the individual soldier as part of the Soldier System program. The Army is also acquiring new vehicle mounted smoke generators to improve the capability to conceal moving forces and high value targets. To reduce fratricide the Army is pursuing two options. The Battlefield Combat Identification System (BCIS) will provide an interrogation/response system for Army weapons platforms that will allow them to accurately and instantly identify friendly forces; the digitization program for Army forces will provide pilots and vehicle commanders with total situational awareness that will allow them to locate friendly vehicles and distinguish them from hostile targets.



SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
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Force XXI Land Warrior

Future Missile
Technology Integration

Integrated Biodetection
AID

Joint Combat
Identification ACID

Joint Countermine
ACID

Medical Research and
Development

Mine Hunter/Killer AID

Multispectral
Countermeasures

NBC Science and
Technology Program

Tactical High Energy
Laser (THEL)

Aerostat

Medium Extended Air
Defense System
(MEADS)

Joint Service Lightweight
Integrated Suit
Technology (JSLIST)

National Missile Defense
(NMD)

Theater High Altitude
Area Defense System
(THAAD)

Battlefield Combat
Identification System
(BCIS)

Biological Integrated
Detection System (BIDS)

Joint Tactical Ground
Station (JTACS)

Remote Sensing
Chemical Agent
Detection (M21)

Sentinel

Smoke Generator (M58)

Automatic Chemical
Agent Detector/Alarm
(ACADA)

Chemical Agent Monitor
(CAM)

Nuclear, Biological, and
Chemical
Reconnaissance
(NBCRS)-Fox

Radiac

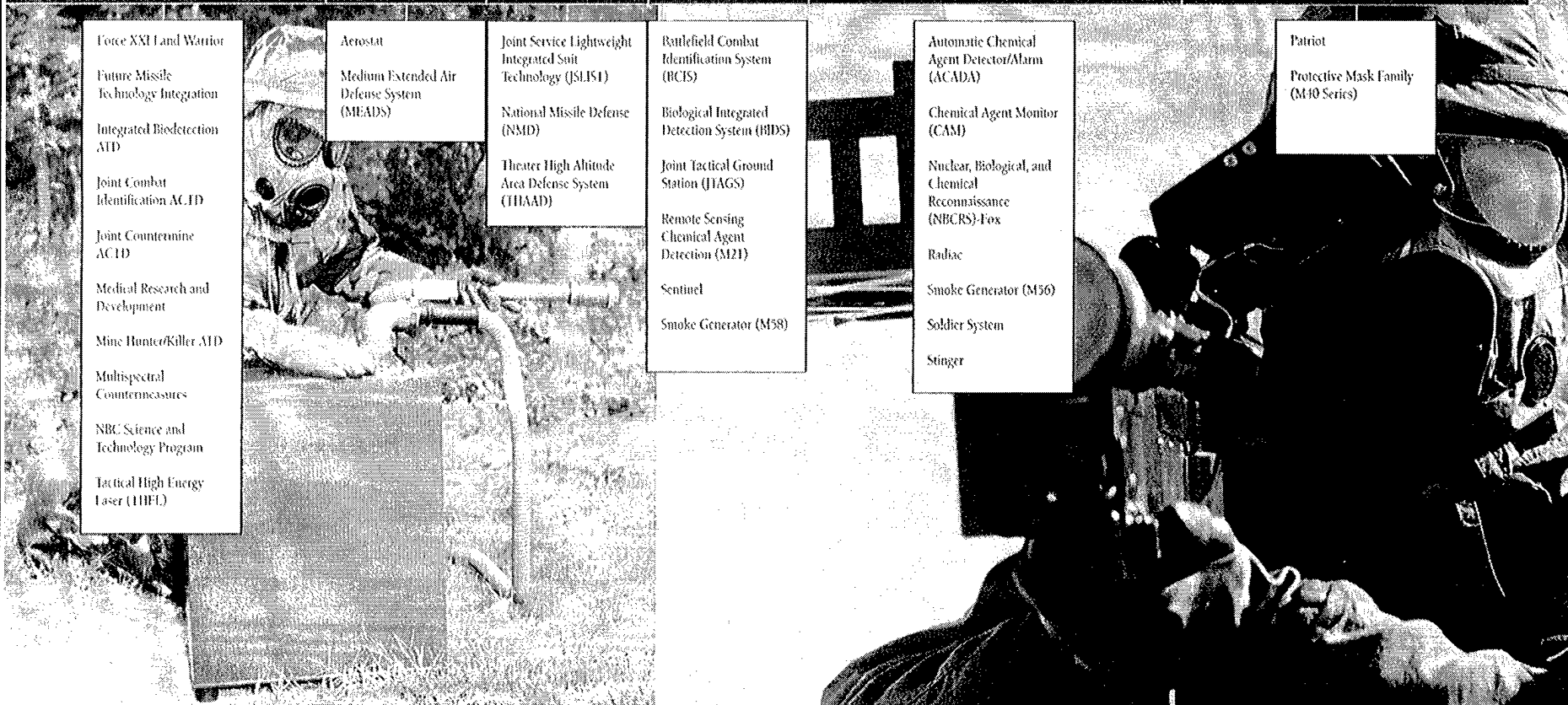
Smoke Generator (M56)

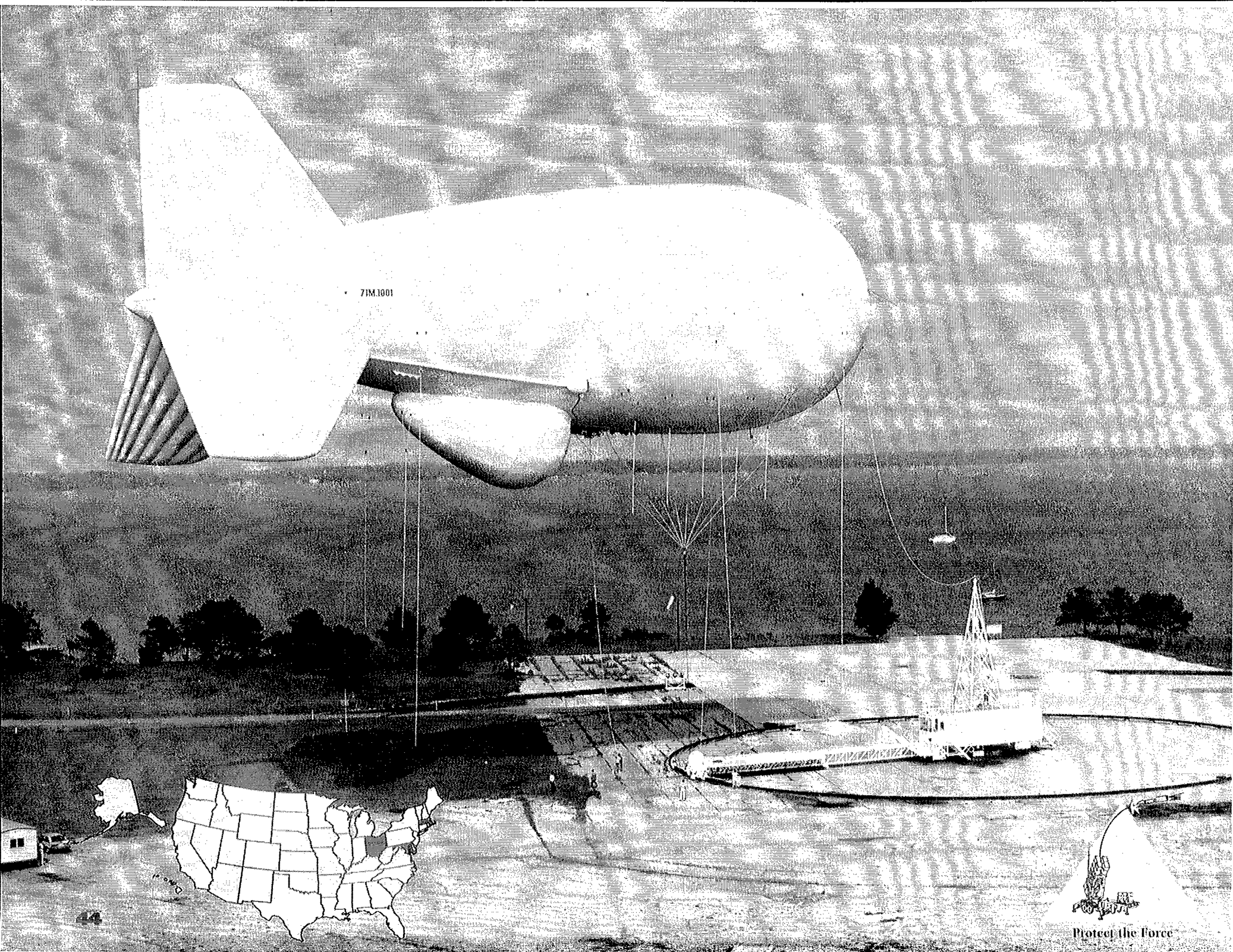
Soldier System

Stinger

Patriot

Protective Mask Family
(M40 Series)





71M.1001



Protect the Force

CONCEPT

MISSION: The Aerostat mission is to provide Over-the-Horizon surveillance and precision tracking data. The mission supports the air-directed surface-to-air missile concept and increases battlespace for land attack cruise missile defense (LACMD).

CHARACTERISTICS: Aerostats are theater-based systems employing advanced elevated sensors with specific application to LACMD. The aerostat system(s) will improve the battlefield commander's ability to support wide-area defense against land attack cruise missiles by expanding battlespace for weapon systems such as PATRIOT, Medium Extended Air Defense System, Aegis Standard Missile, Fighters, and Forward Area Air Defense Systems. Aerostats may also contribute to combat identification and classification.

	Small	Large
	Tactical	Strategic
Surveillance	225-280 Km	320 Km
Precision Track Illuminator	80-150 Km	100-250 Km
Combat ID	TYPE	TYPE
Altitude	10-15 K/ft	20 K/ft
BM/C4I	JTIDS/CEC	JTIDS/CEC
Basing	Land/Sea	Land/Sea
Mobility	Limited/Mobile	Limited/Mobile

FOREIGN COUNTERPART: No known foreign counterpart.

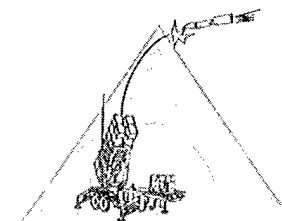
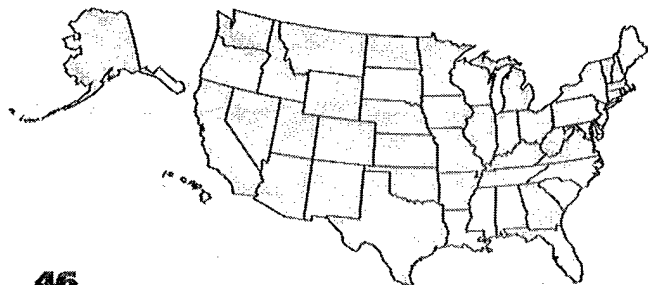
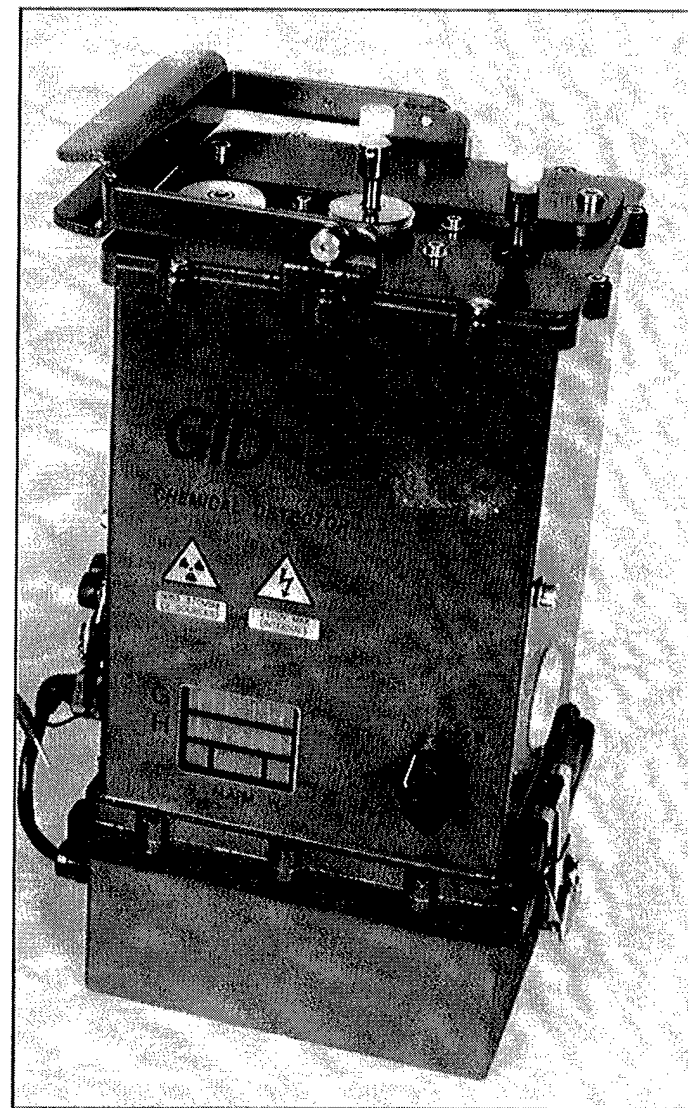
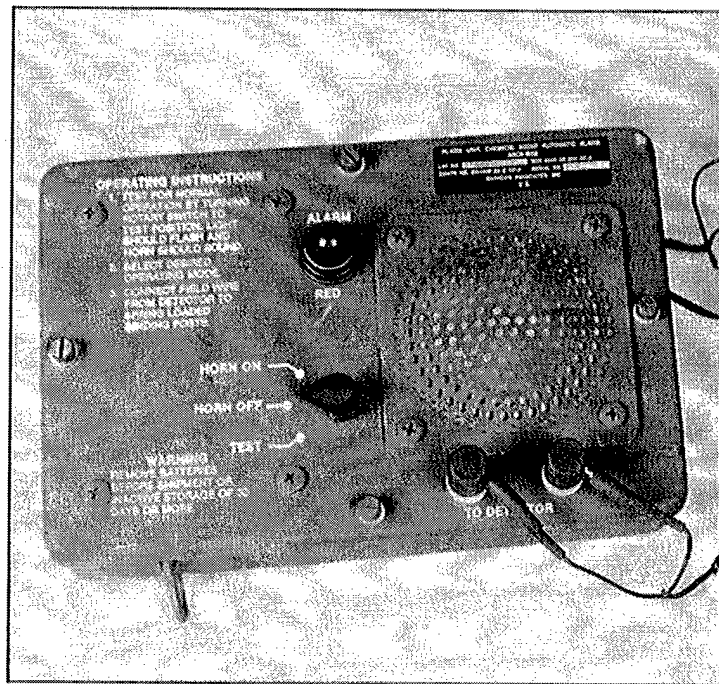
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: On January 11, 1996, the Under Secretary of Defense (Acquisition and Technology) [USD(A&T)] and the Vice Chairman, Joint Chiefs of Staff (JCS) directed the Army to form a joint program office and initiate an Aerostat program. The Navy and Air Force plan to provide full-time deputy program managers and share in providing other required support. On 22 May 96, USD(A&T) and the Vice Chairman, JCS directed the joint Aerostat program, with Army lead, to proceed with concept studies and related risk reduction activities leading to an Advanced Concept Technology Demonstration. The Aerostat Joint Project Management Office has been established and is assigned to the U.S. Army Space and Strategic Defense Command.

PROJECTED ACTIVITIES:

- Award Small/Tactical Aerostat System Development contracts - FY97.
- Aerostat ADSAM Demonstration at Roving Sands 97 Operational Exercise.
- Risk Reduction effort with the Defense Advanced Research Projects Agency and other government agencies.

PRIME CONTRACTOR: Hughes Raytheon (Bedford, MA)
Lockheed Martin (Akron, OH)
Northrop Grumman (Baltimore, MD)



PRODUCTION AND DEPLOYMENT

MISSION: The Automatic Chemical Agent Detector Alarm-Non Developmental Item (ACADA-NDI) is an advanced point-sampling, chemical agent alarm system capable of detecting both nerve and blister agents. It will be used by Army, Navy, and Air Force units; USMC has recently expressed interest in the ACADA-NDI.

CHARACTERISTICS: The ACADA-NDI will replace the M8A1 Alarm as an automatic point detector and will augment the M1 Improved Chemical Agent (MICAD) Monitor as a survey instrument. It can automatically communicate (using MICAD) to battlefield data transfer and warning systems. It does not require a specific military operator and can be used in a fully automatic mode, communicating its warning through the MICAD system.

Weight: 24 lbs (complete w/carry case, battery pack and M42 remote alarm)

Size: 5" X 6" X 12" detector and battery box (15 lbs)

Detection Capability: nerve and blister agents

Battery life: approximately 15 hours @ 70 F

FOREIGN COUNTERPART: M90-D1 Detector

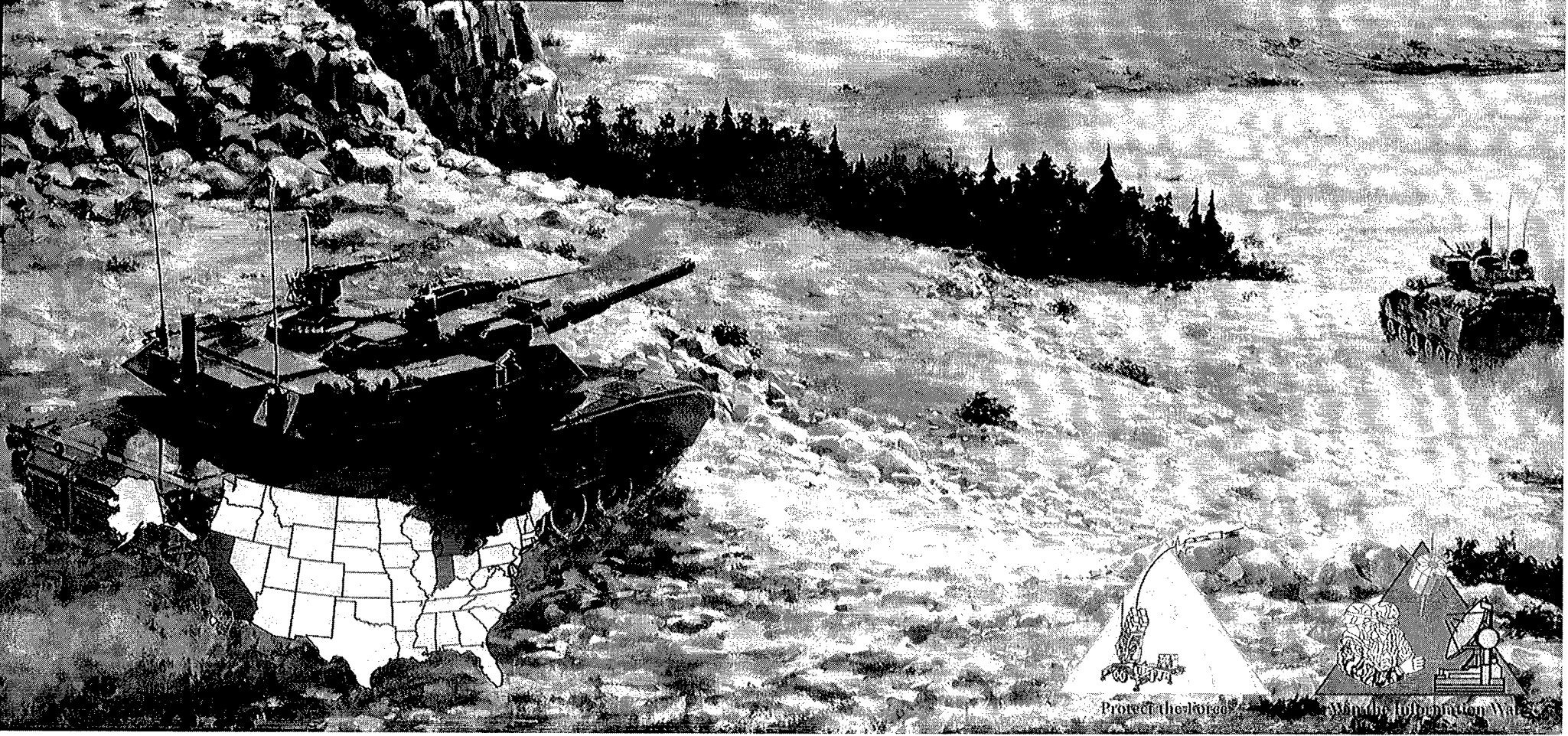
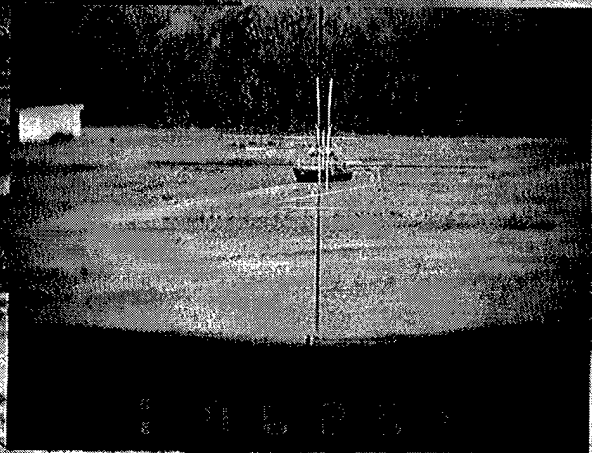
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: Following a Production Validation Test (PVT) which consisted of operational and technical testing by the Army and Air Force, the GID-3, produced by Graseby Ionics, UK, was selected as the single NDI to proceed to type classification. A second phase of the PVT is ongoing to complete the remaining tests. At completion of a successful PVT, the GID-3 will be type classified STANDARD, meeting the requirements of the Army and Air Force.

PROJECTED ACTIVITIES: Full rate production deliveries begin - June 1997.
First Unit Equipped is USAF in 3QFY97, Army in 4QFY97.

PRIME CONTRACTOR: Graseby Dynamics LTD (UK)

3



Protect the Corps

Win the Information War

MISSION: The Battlefield Combat Identification System (BCIS) will provide the materiel solution for minimizing battlefield fratricide incidents.

CHARACTERISTICS: The BCIS is a point-of-engagement, millimeter-wave (MMW), question-and-answer type of system that will greatly reduce the risk of fratricide during military operations. The BCIS will provide positive identification of friendly ground platforms and dismounted soldiers from both ground and air weapons platforms and dismounted soldiers. The BCIS, via its digital data link capability, will provide local situational awareness of information with sufficient position resolution and timeliness to support the fire/no-fire decision at the platform level and improve combat effectiveness. Weapons platforms that have a direct fire capability and/or are instrumental in initiating indirect fire missions will transmit an interrogating MMW signal toward the suspect target. Friendly platforms will respond automatically through their transponding component with its identification as a friend. The BCIS is an integral part of the Army's digitized effort for combat identification and is one of several Horizontal Technology Initiatives. It will be used by Combat, Combat Support, and Combat Services Support units within the CONUS contingency forces.

Operating frequency range: MMW (ground-to-ground; air-to-ground) or UHF (air-to-ground)

Antenna coverage: Directional (interrogator)

Omni or 360 deg (transponder)

Range: 150 m-5,500 m (ground-to-ground)

150 m-8,000 m (air-to-ground)

Target identification time: < 1 sec

FOREIGN COUNTERPART: No known foreign counterpart.

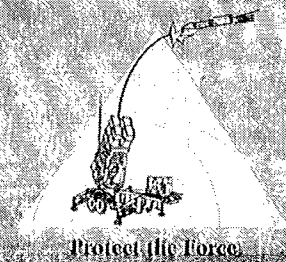
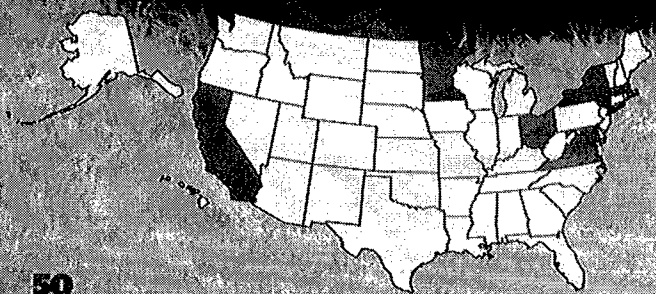
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The BCIS is currently in the Engineering and Manufacturing Development phase with 92 of 111 units delivered as of 3Q96. BCIS has been tested on the Abrams M1A1 and M1A2, HMMWV, FISTV, and Bradley Fighting Vehicle with demonstrated system performance which met/exceeded critical requirements. The Production Qualification Test and the Limited User Test were completed in 4Q95 and 1Q96, respectively. Sixty-two systems plus spares were installed on platforms at Ft. Hood in 3Q96 to participate in TFXXI AWE. Producibility enhancements and low cost design efforts were initiated in 4Q96.

PROJECTED ACTIVITIES: Continue Producibility Enhancement and Low-Cost Design Efforts in FY97/98.
Participate in TF XXI Advanced Warfighting Experiment 2Q97.
Participate in International Demo 3Q97.
Produce systems for Initial Operational Test and Evaluation FY98.

PRIME CONTRACTOR: Hughes (Ft. Wayne, IN)
TRW (Redondo Beach, CA)

* See appendix for list of subcontractors.



MISSION: As a corps level asset the Biological Integrated Detection System (BIDS) will mitigate the effects of large area biological warfare attacks during all phases of a campaign. The BIDS network will be used to provide the basis for warning and confirming that a biological attack has occurred. The system will provide presumptive identification and produce a safety configured sample for later laboratory analysis.

CHARACTERISTICS: The BIDS is a shelter (S-788 Lightweight Multipurpose Shelter) mounted on a dedicated vehicle (M1097 Heavy HMMWV) and equipped with a biological detection suite employing complementary technologies to detect large area biological attacks. The system is designed to allow removal of the shelter from the vehicle for fixed site applications. The system includes a trailer-mounted 15-kW generator (PU-801) to provide electrical power. The shelter includes the following equipment: (1) Collective Protection; (2) Environmental Control; (3) Sample Refrigeration; (4) HF and VHF Communication; (5) Meteorology Instrumentation and (6) Biological Detection Suite.

The BIDS biological detection suite contains multiple technologies selected to detect various characteristics of a biological aerosol attack. The BIDS integrates aerodynamic particle sizing, bioluminescence, flow cytometry, mass spectrometry and immunoassay technologies in a complementary, layered manner to increase detection confidence. The BIDS will detect and identify specific biological agents, at the following sensitivity levels and have the capability of being upgraded/modified to detect and identify other biological agents: Non Developmental Item (NDI) (Interim) BIDS - Detect 25 Agent Containing Particles per Liter of Air (ACPLA) within 15 minutes, identify 25 ACPLA within 30 minutes (45 minutes total); P3I BIDS - Detect 15 ACPLA within 10 minutes and identify 15 ACPLA within 20 minutes (30 minutes total).

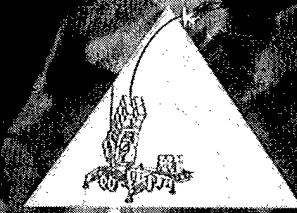
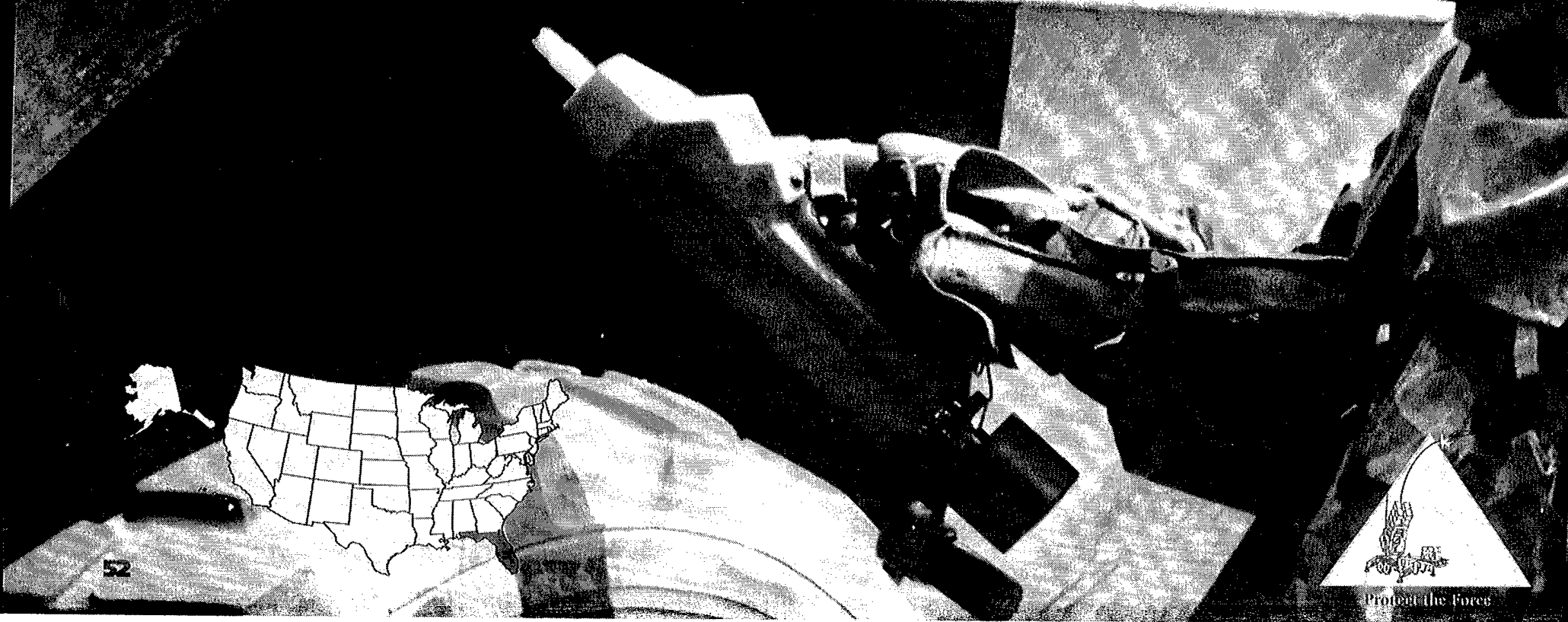
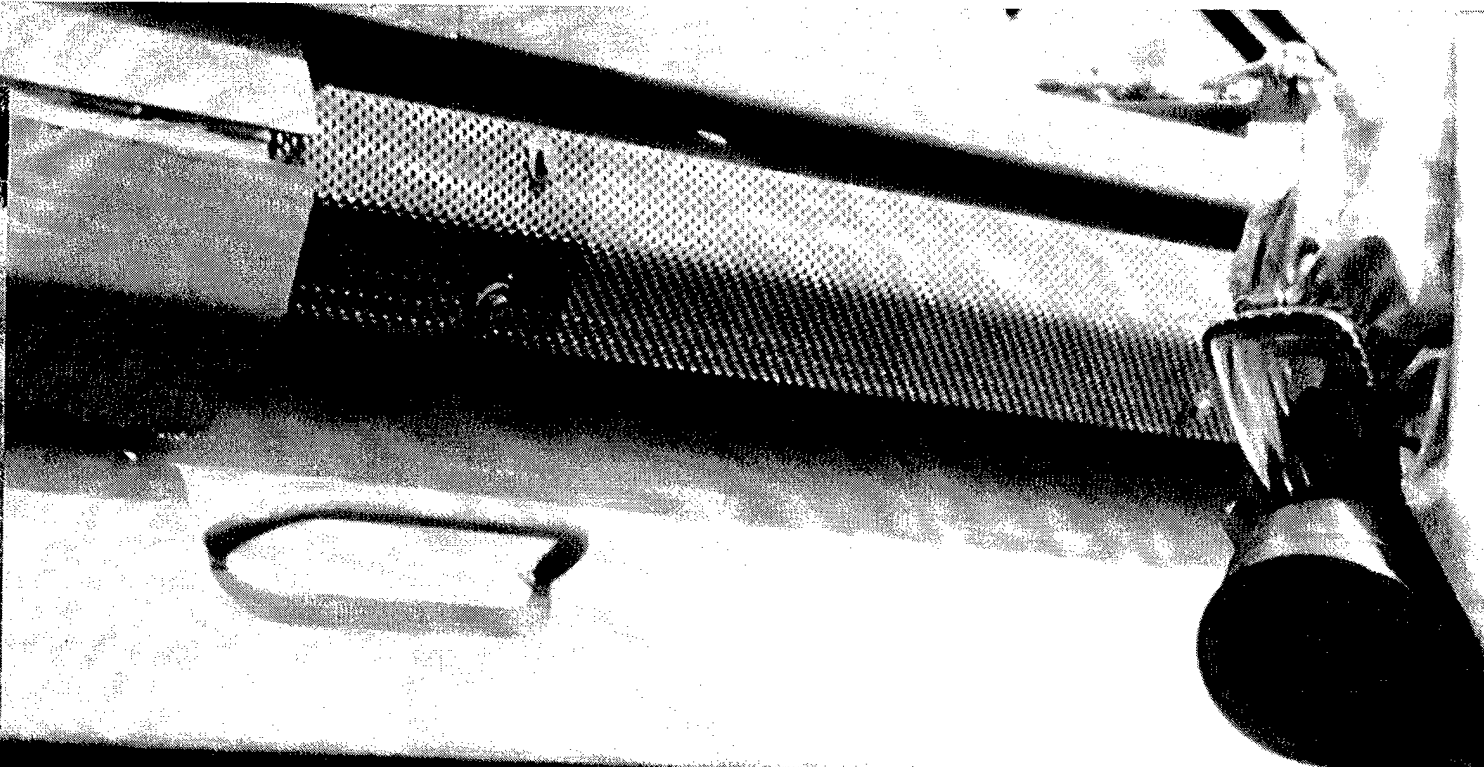
FOREIGN COUNTERPART: No know foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: BIDS NDI has been fielded. BIDS P3I is in production.

PROJECTED ACTIVITIES: Near Term activities include: (1) Complete Production Prove-Out Test (PPT) for long lead time (LLT) P3I components (Biological Detector and Chemical Biological Mass Spectrometer); (2) Conduct a special IPR for production approval of LLT components and (3) Fabricate three P3I prototypes.

PRIME CONTRACTOR: Bruker Analytical Systems (Billerica, MA)
Environmental Technologies Group (Baltimore, MD)
Kaman Sciences Corporation (Alexandria, VA)



PRODUCTION AND DEPLOYMENT

MISSION: The Chemical Agent Monitor (CAM) and the Improved CAM (ICAM) provide a means of quickly locating the presence of (or lack of) nerve and mustard agent contamination on personnel and equipment.

CHARACTERISTICS: The CAM is a hand-held device used to quickly find nerve and mustard agent contamination on people and equipment. It is used by troops in full protective clothing, after an attack or after going through a contaminated area. It provides fast low level detection of both nerve and mustard vapors, differentiates between nerve and mustard agents, provides an indication of the relative magnitude of the hazard present, and is not affected by most common battlefield interferences. The CAM provides information not previously available about the chemical hazard and provides it in seconds for both nerve and mustard. Use of the CAM on a chemical battlefield reduces the risk a commander may have to take in reducing the level of mission oriented protective posture in a combat situation. The CAM gives a commander the ability to quickly monitor for contamination, allowing soldiers and equipment to remain engaged in their combat missions and reduces the need for decontamination. The CAM is also used to check the effectiveness of decontamination operations on people and equipment. The ICAM differs from the CAM in that it is more reliable and much less costly to operate and repair.

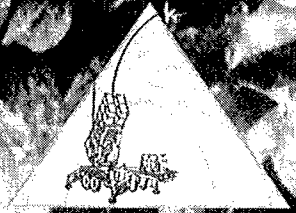
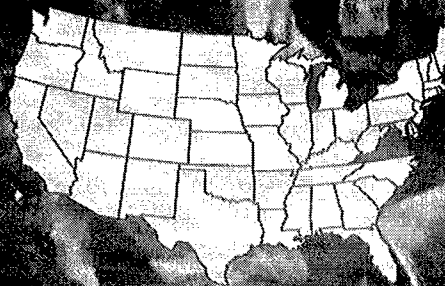
FOREIGN COUNTERPART: France: AP2C

FOREIGN MILITARY SALES: CAM is a foreign-developed item (U.K.), therefore foreign military sales are restricted by a license agreement. Sales are allowed under Foreign Military Credits. Egypt has procured 6 CAMs for their Wadimobile and is considering a significantly larger purchase.

PROGRAM STATUS: Production of 9,634 CAMs for the Army is complete and more than 9,300 fielded. A multi-year contract was awarded to Intellitec in December 1995 for a quantity of 3,135 ICAMs and associated spares. Delivery is scheduled to begin September 1998, following an extensive production acceptance test.

PROJECTED ACTIVITIES: Conduct a pre-production evaluation of the technical data package followed by production acceptance testing from May through September 1997.

PRIME CONTRACTOR: Intellitec Division (Technical Products Group) (DeLand Florida)



Protect the Force

SCIENCE AND TECHNOLOGY	CONCEPT	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
	DEM/VAL			

MISSION: The Joint Service Lightweight Integrated Suit Technology (JSLIST) program provides a Joint Service Chemical Biological (CB) protective clothing ensemble that can be tailored to the diverse operational needs of the individual soldier, marine, airman, and sailor and is compatible with existing and emerging individual protective equipment.

CHARACTERISTICS: The JSLIST system will consist of three major components: lightweight CB protective garments (overgarment, undergarment, duty uniform, and aviation overgarment), improved CB protective gloves, and multipurpose overboots. Each component is based on state-of-the-art material technologies that have undergone extensive user evaluation and field and laboratory testing. Through unique system and component design features, individual users can select any combination of JSLIST components to form a mission-tailored protective system. This system will provide the highest level of protection against current CB threats while reducing heat strain, weight, and bulk to an absolute minimum. User performance is optimized by balancing CB protection and heat strain management with service-defined mission requirements. Although the main thrust of JSLIST is to develop the next generation CB protective system, considerable focus also continues on ensuring full compatibility and integration with equipment such as developmental masks and body armor and developmental systems such as Land Warrior, Air Warrior, and Mounted Warrior. Under management of the four Service Program managers, JSLIST has joint participation in every aspect of the program from management, system planning, system and component design, material selection, test execution, and data assessment. The program structure and approval process have been configured to assure full user participation so that common and service unique requirements are met.

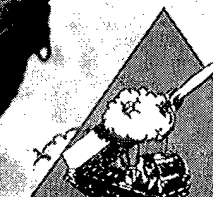
FOREIGN COUNTERPART: Multiple countries have similar products.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: Phase I preliminary wear tests, material tests (chemical, physical properties, and heat stress) and design of suits resulted in down selection of materials and garment designs to continue into Phase II. Phase II included extensive field DT/OT testing at diverse environmental sites and various user facilities as well as uniquely developed standardized chemical agent swatch, heat stress, aerosol, man-in stimulant system, and FR tests. A critical design review has been conducted to determine any modifications that may need to be made to ensure JSLIST system provides the best ensemble for CB protection.

PROJECTED ACTIVITIES: Based on extensive testing and preliminary evaluations, minor modification are being made to JSLIST components and additional testing is being scheduled to ensure that modifications provide desired results. An MSIII-type classification is scheduled for 2QFY97 with initial production of garments in FY97. The JSLIST P3I program will structure an iterative process that will allow for periodic technology insertion of tested approved materials into the JSLIST production cycle.

PRIME CONTRACTOR: Battelle (Stafford, VA)



SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL		PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
			EMD		

MISSION: The Joint Tactical Ground Station (JTACS) will receive and process data in-theater from space-based infrared sensors and disseminate warning, alerting and cueing information on TBMs and other tactical events of interest.

CHARACTERISTICS: JTACS is a theater tactical ground station contained in an 8 ft by 8 ft by 20 ft ISO shelter. The system is transportable by C-141 aircraft and can be operational within hours. For redundancy, during contingency situations, the system is deployed in pairs. It is envisioned that the system will be jointly operated during crisis situations. To reduce cost and accelerate fielding, JTACS utilizes commercial off-the-shelf hardware with minor modifications to enhance transportability and deployment options. This system is being developed to interface with major existing and planned communication systems.

FOREIGN COUNTERPART: No known foreign counterpart.

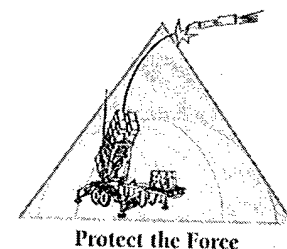
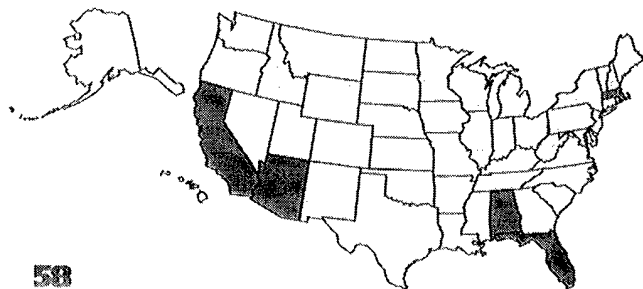
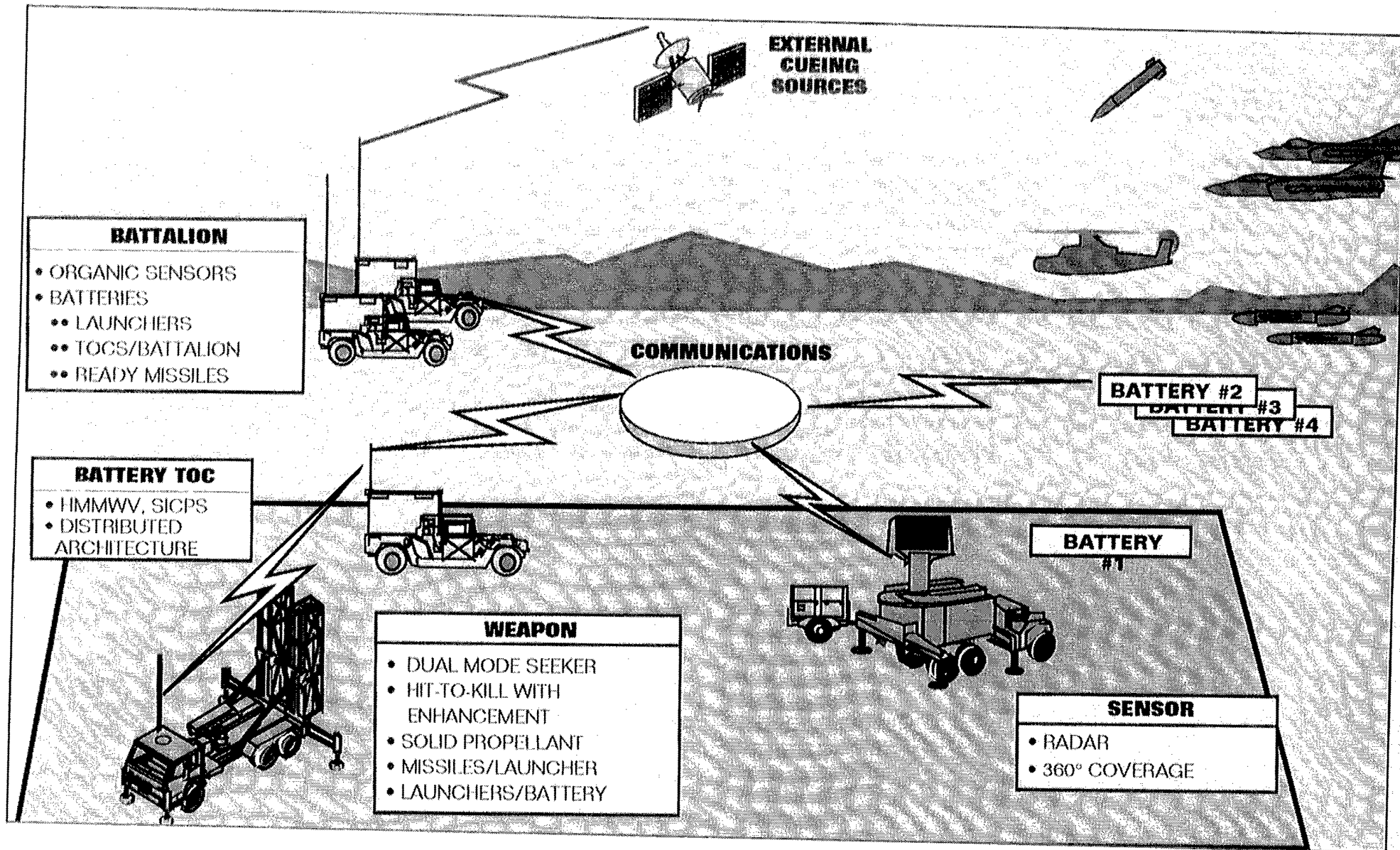
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: JTACS is a Program Executive Office Missile Defense, ACAT III managed program, and is a joint interest effort with the Navy. The Program has transitioned from a Ballistic Missile Defense Organization/U.S. Army Space and Strategic Defense Command Advanced Technology Demonstration to an Army funded formal acquisition program. The technical feasibility of JTACS was validated by the Tactical Surveillance Demonstration proof-of-principle prototype, which was successfully tested at White Sands Missile Range. A transportable prototype was delivered during FY93 and underwent developmental and operational testing during 4QFY93 and 1QFY94. Both prototypes are currently deployed supporting EUCOM and PACOM respectively. A successful MS II IPR decision was held on 6 May 1994 which approved entry into Engineering and Manufacturing Development (EMD). The EMD contract with production options was awarded on 8 July 1994. The two EMD units were delivered 3QFY95 and underwent extensive technical and operational testing. The program was approved to enter production following a successful 26 February 1996 MS III decision review.

PROJECTED ACTIVITIES: Production units to be fielded in FY97. Phase I of a two-phased product improvement program will also begin in FY97, ending in FY99. Phase I will enhance joint communications and the system's ability to predict both the launch and impact points of tactical ballistic missiles. Phase II, scheduled from FY99-FY04, will enable JTACS to be compatible with the next generation of space-based infrared satellites. This will enable JTACS' early warning capability to remain viable well into the 21st century.

PRIME CONTRACTOR: GENCORP Inc. (Aerojet Electronic Systems) (Azusa, CA; Colorado Springs, CO)

* See appendix for list of subcontractors.



CONCEPT

MISSION: Medium Extended Air Defense System (MEADS) will provide low-to-medium air and theater missile defense to the maneuver forces and other critical forward deployed assets throughout all phase of tactical operations. It will operate both in an enclave with upper tier systems in areas of debarkation and assembly and alone or with Forward Area Air Defense System in the division area of the battlefield during movement to contact and decisive operations.

CHARACTERISTICS: MEADS will provide air and missile defense of vital corps and division assets associated with the Army and Marine Corps maneuver forces. MEADS will utilize a combination of a netted and distributed architecture, modularly configurable battle elements, interoperability with other airborne and ground based sensors, and improved seeker/sensor components to provide a robust defense against the full spectrum of TBM, cruise missile, unmanned aerial vehicle, TASM, rotary wing, and forward wing threats. MEADS will be designed to provide: 1) defense against multiple and simultaneous attacks by SRBMs, low cross-section cruise missiles, and other air-breathing threats to the force; 2) immediate deployment for early entry operations with as few as six C-141 sorties; 3) mobility to move rapidly and protect maneuver force assets during offensive operations; 4) a distributed architecture and modular components to increase survivability and flexibility of employment in a number of operational configurations; and 5) a significant increase in firepower while greatly reducing manpower and logistics requirements. Given these characteristics, MEADS can rapidly respond to a variety of crisis situations and satisfy the needs of the joint operational and tactical commanders.

FOREIGN COUNTERPART: Germany: Taktisches Luftverteidigungs System (TLVS)

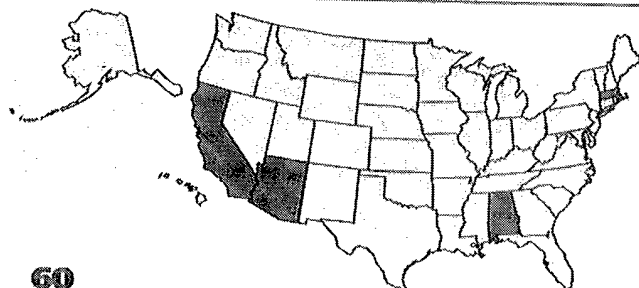
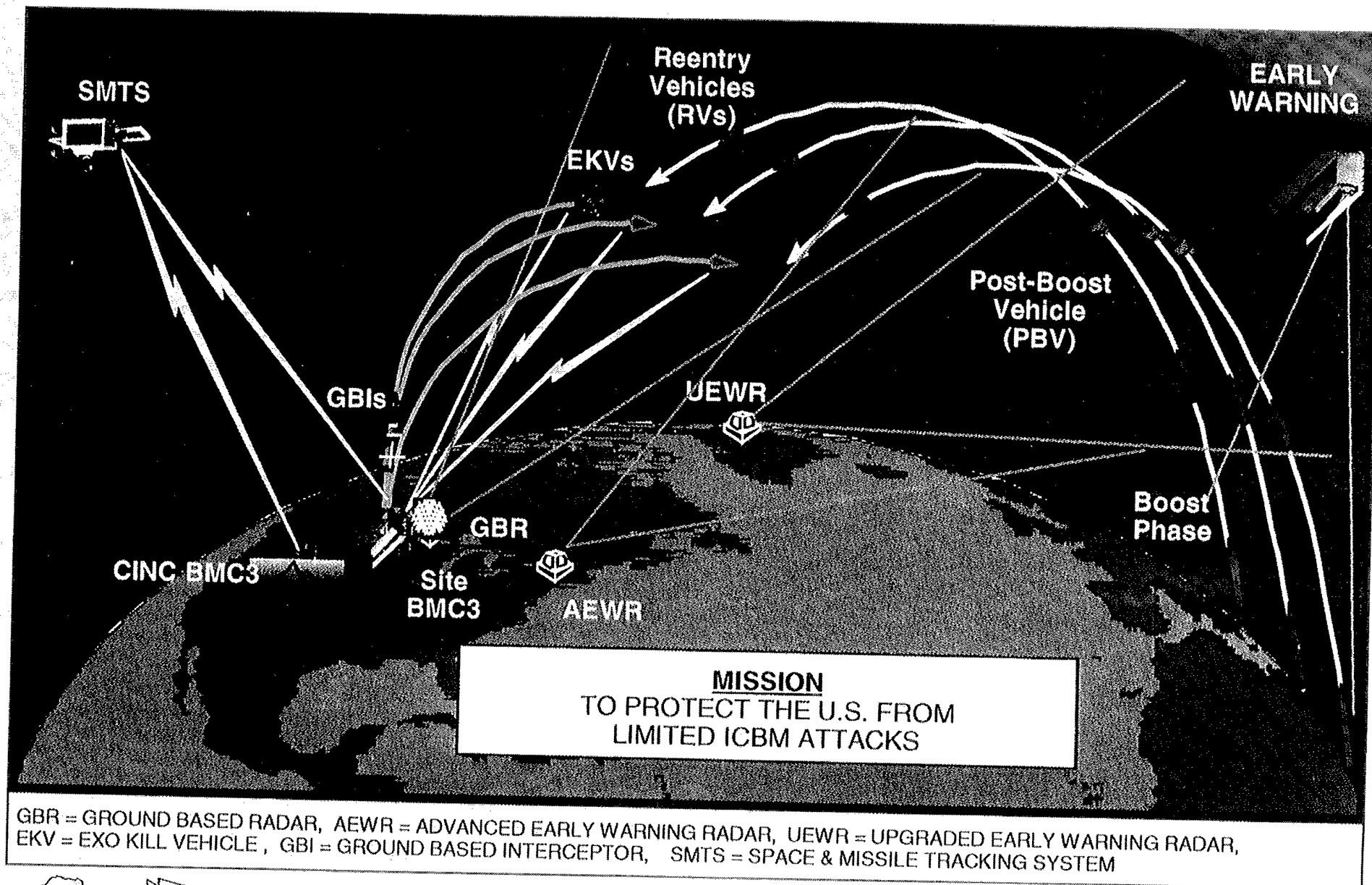
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: Concurrent with the U. S. MEADS requirements and concepts, discussions with German (GE) government and industry confirmed similar operational/technical requirements which provided an opportunity for cooperation. Discussions were later expanded to include France (FR) and Italy (IT). On 20 Feb 95 representatives of U.S., GE, FR, and IT signed a Statement of Intent (SOI) to cooperate on the development and production of the MEADS. This cooperation was based on the U.S. providing 50% of funding and receiving 50% of the workshare. However, France later decided not to participate in the program. Thus, the U. S., GE, and IT signed a 1 May 96 Memorandum of Understanding formally initiating the program's first phase, known as Project Definition and Validation (PD-V). New cost/work share ratios are 60%/25%/15% for the U. S./GE/IT respectively. MEADS will be managed by the NATO MEADS Management Agency, a NATO-chartered agency located in Huntsville, Alabama. During PD-V, two competing international teams will define total system concepts, establish system and prime item specifications, demonstrate critical functions, develop digital end-to-end simulations, and establish integrated program plans and cost estimate for the Design and Development and Production Phases.

PROJECTED ACTIVITIES: Downselect to one international team in the late FY98-early FY99 timeframe for the Design and Development phase, currently scheduled to begin 2QFY99.

PRIME CONTRACTOR: MEADS will have two international contractor teams competing during the PD-V Phase: 1) MEADS Inc. (consortium consisting of U.S. contractor Hughes and Raytheon Co (joint venture), and European contractors Deutsch Aerospace (Germany), Siemens (Germany), and Alenia (Italy), and 2) MEADS International Inc. (consortium consisting of U.S. contractor Lockheed Martin Integrated Systems and the same three international contractors).

* See appendix for list of concept studies contractors.



DEM/VAL

MISSION: To protect the United States against limited long range ballistic missile (ICBM/SLBM) attacks.

CHARACTERISTICS: The National Missile Defense (NMD) system will interoperate with external Early Warning (EW) sensors (DSP/SBIRS and EW Radars) and the United States Space Command (USSPACECOM) Command and Control Center via CINC Battle Management Command Control and Communications (BMC3). The Army elements of the NMD System include ground-based exoatmospheric hit-to-kill interceptors, a ground-based, phased array, national defense radar (for surveillance, track, object classification and kill assessment) and site BMC3 (for human-in-control, engagement planning, top level decision making and system communications). For an effective early capability to protect all 50 states prior to SBIRS-Low availability, advanced and upgraded EW radars may be required.

An NMD engagement is initiated based on early warning sensors detecting and designating hostile ballistic missile launches toward the U.S. and transmitting the tracking data through the CINC BMC3 to the site BMC3. Using data from surveillance and tracking systems including the ground-based radar, the site BMC3 aids the operators in identifying the hostile reentry vehicles and planning the engagement. After launch and burning of the booster, a kill vehicle separates and repositions itself pointing the seeker field-of-view to the predicted target position. The on-board computer receives additional target updates from the site BMC3 based on surveillance data and executes intercept course correction maneuvers. Once uncapped, the on-board passive seeker searches and acquires the target and any associated objects in its field-of-view. The target is designated using a combination of target object map, provided by the site BMC3 based on radar and EW sensor data, and on-board target selection capabilities. After target designation, the kill vehicle tracks the target executing "end game" maneuvers to achieve a direct impact kill. The intercept is monitored by the radar and EW sensors for kill assessment or further battle management action, if required.

FOREIGN COUNTERPARTS: Russia: Moscow ABM System

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The NMD Program has been elevated from a technology effort to a Deployment Readiness (or 3+3) Program and has been designated as a Major Defense Acquisition Program. The Army is supporting Ballistic Missile Defense Organization in the execution of the NMD Program. The goal of the program is to develop and test the elements of the initial ground-based NMD system within the next three years that could be deployed within an additional three years, if dictated by the threat. The Army's efforts are focused on developing and demonstrating the Ground Based Interceptor, the Ground Based Radar, and the Site BM/C3. The baseline program will demonstrate the integrated performance of the initial NMD elements by the end of FY99.

PROJECTED ACTIVITIES: Two Exoatmospheric Kill Vehicle (EKV) sensor flight tests in FY97 (one per contractor); EKV down select in FY98. One EKV intercept flight test in FY98 and one in FY99. One system flight test in FY99. GBR prototypes available for integrated testing beginning in FY98.

PRIME CONTRACTOR: EKV Contractors are General Motors Corp. (Hughes Aircraft Company) and Rockwell International. The payload launch vehicle (PLV) contractor is Lockheed Martin (Lockheed Missiles and Space Company). The GBR contractor is Raytheon. The BMC3 contractor is TRW.

* See appendix for list of subcontractors.



MISSION: The Nuclear, Biological, and Chemical Reconnaissance System (NBCRS) will detect, identify, and mark areas of nuclear and chemical contamination, and report accurate information to supported commanders in real time. The NBCRS can also sample for nuclear, biological and chemical contamination.

CHARACTERISTICS: The currently fielded XM93 and, soon to be fielded, M93A1 are wheeled armored vehicles equipped with a fully integrated nuclear and chemical detection, warning, and communications capability, and the added capacity to sample nuclear, biological and chemical contamination for future analysis. These systems can collect soil, water, and vegetation samples for later analysis; mark areas of nuclear and chemical contamination; and transmit, in real time, NBC information to unit commanders in the area of operation. The hazards to the NBCRS crew are minimized through the inclusion of vehicle NBC collective protection, providing positive overpressure with heating and cooling for crewmen.

Body style: 6-wheel, armored-collective protection

Engine: V8 Diesel—320 hp

Weight: XM93: 18.7 ton; XM93E1: 20.2 ton

Speed: 65 mph

Range: 500 mi

Crew: XM93: 4 soldiers; XM93E1: 3 soldiers

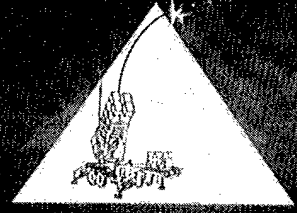
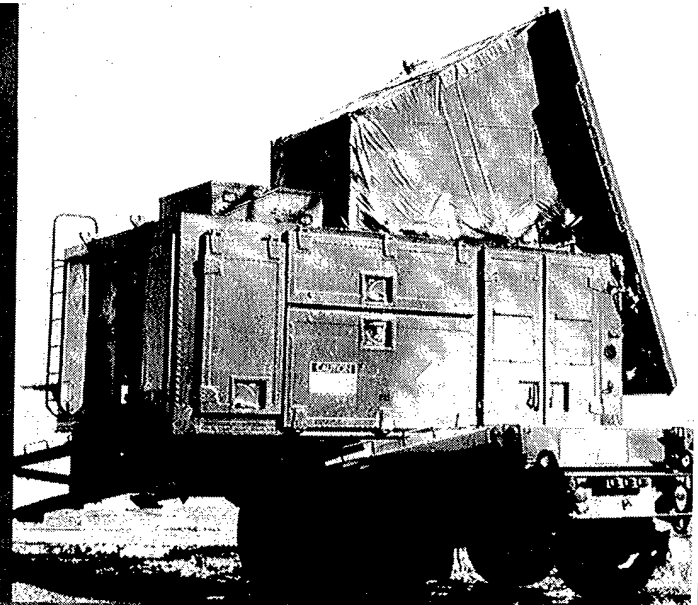
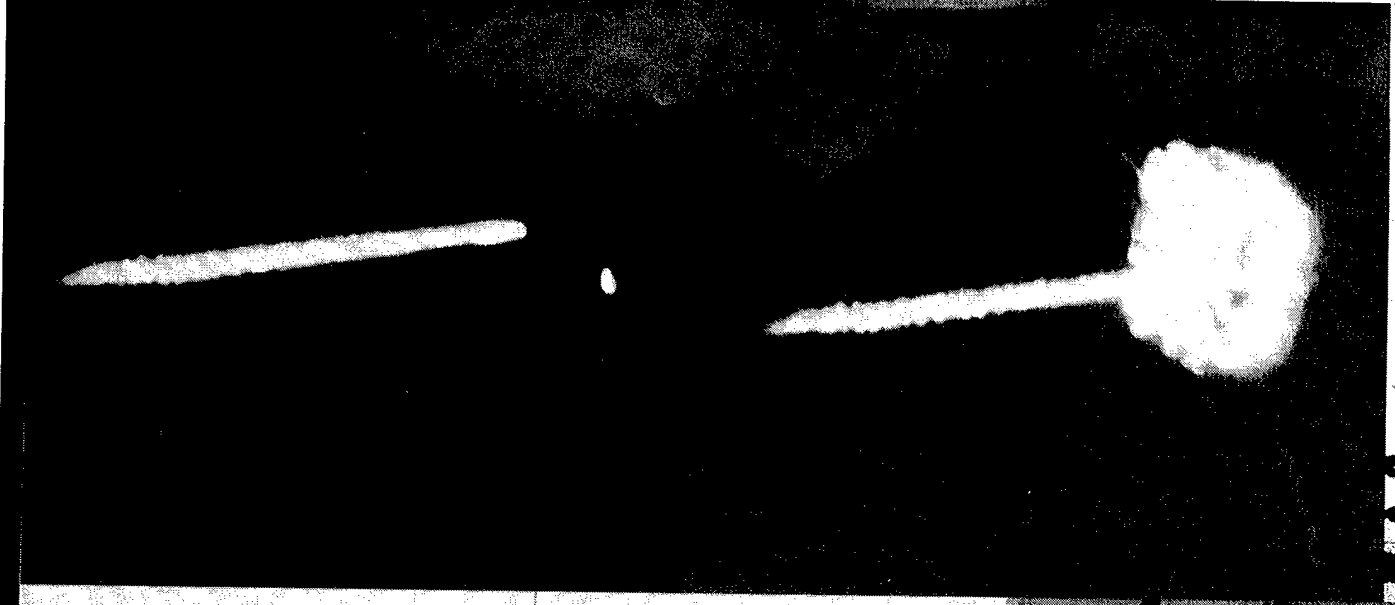
FOREIGN COUNTERPART: China has an NBC reconnaissance vehicle. Russia: BRDM-ZRKH, MTLB, RKHM, UAZ-469RKH.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The NBCRS is a Non-Developmental Item program consisting of four phases: (1) Proposal Evaluation and Shoot-Off phase, during which proposals were evaluated, competition conducted, and a winner selected. General Dynamics Land Systems was selected to complete all additional phases; (2) Interim System Production phase for the XM93, which provided 48 contractor-supported systems for urgent fielding. Additionally, the German Government donated 60 German XM93 NBCRS to the U.S. Government in support of Operation Desert Storm (ODS). Following ODS, all systems were redeployed worldwide to U.S. Army and Marine Corps forces; (3) System Improvement phase to design, fabricate, and test the XM93E1 NBCRS which satisfies all Required Operational Capabilities (ROC) requirements; and (4) A Block I modification program to upgrade all XM93 NBCRSs to the M93A1 configuration.

PROJECTED ACTIVITIES: Production Qualification Testing is scheduled for September 1997.
First Unit Equipped with the new M93A1 in March 1998.

PRIME CONTRACTOR: General Dynamics (Detroit, MI)
Thyssen Henschel (Germany)



ARMY

MISSION: The PATRIOT Missile System provides high- and medium-altitude defense against aircraft and tactical ballistic missiles to critical assets and maneuver forces belonging to the corps and to echelons above corps. The PATRIOT Advanced Capability-3 (PAC-3) system upgrade, along with the PAC-3 missile, will provide an advanced anti-tactical missile capability to the current fielded system.

CHARACTERISTICS: The combat element of the PATRIOT Missile System is the fire unit, which consists of a Radar Set (RS), an Engagement Control Station (ECS), an Electric Power Plant (EPP), an Antenna Mast Group (AMG), and eight remotely located Launching Stations (LS). The RS provides all tactical functions of airspace surveillance, target detection and tracking, and missile guidance. The ECS provides the human interface for command and control of operations. Currently, each launcher contains four ready-to-fire missiles, sealed in canisters which serve a dual purpose as shipping containers and launch tubes. PATRIOT's fast reaction capability, high firepower, ability to track 50 targets simultaneously, and the ability to operate in a severe electronic countermeasures environment are features not available in previous air defense systems. The PAC-3 upgrade program will incorporate significant upgrades to the RS, ECS, and will include up to 16 advanced hit-to-kill missiles into three to four of the eight launchers per firing battery, thus increasing fire power and ballistic missile defense capabilities. The primary mission of the PAC-3 missile is to kill both maneuvering and non-maneuvering tactical ballistic missiles. The PAC-3 missile will also have a capability to counter cruise missiles and aircraft.

FOREIGN COUNTERPART: Russia: SA-10 and SA-12

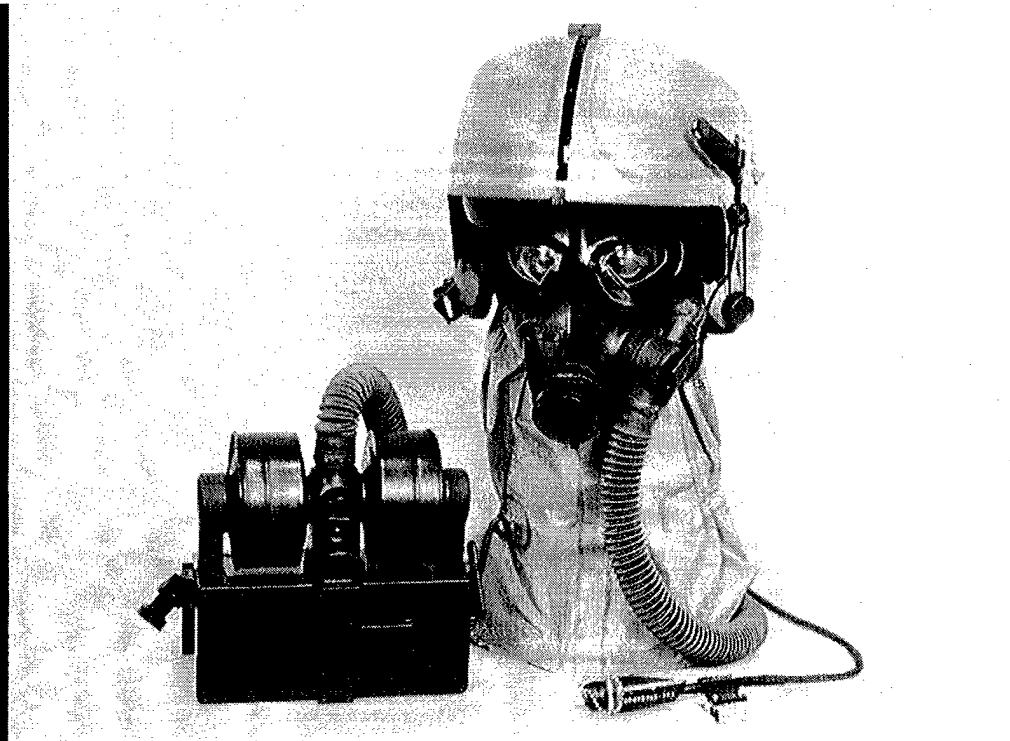
FOREIGN MILITARY SALES: Germany, Israel, Japan, Kuwait, the Netherlands, and Saudi Arabia are currently participating in PATRIOT acquisition programs. Discussions with several other interested allies for PATRIOT acquisition are ongoing.

PROGRAM STATUS: PATRIOT has completed fielding to U.S. forces and is deployed in CONUS, Europe, Korea, and Southwest Asia. U.S. missile production deliveries include PATRIOT Anti-Tactical Missile Capability-Level 2 (PAC-2), and Guidance Enhancement Missiles. The PAC-3 capability comprises system improvements that will result in a time-phased series of system hardware and software changes designed to improve performance against an evolving threat, meet user needs, and correct existing system deficiencies in a timely, affordable manner.

PROJECTED ACTIVITIES: The PAC-3 missile, a key component of overall system improvements, has entered the test flight phase of Engineering and Manufacturing Development (EMD). The Low-rate Initial Procurement (LRIP) decision for the PAC-3 missile is scheduled to occur in 3rd Quarter 1997.

PRIME CONTRACTOR: Lockheed Martin Vought Systems (Grand Prairie, TX)
Raytheon (Bedford, MA)

* See appendix for list of subcontractors.



MISSION: The family of chemical, biological and radiological protective masks (M40 Series) provides respiratory, eye, and face protection against chemical and biological agents, toxins, radioactive particles and battlefield contaminants. These masks are issued to every soldier, the M42A2 to armored crews, M45 to rotary wing crew, and the M40A1 to the balance of the force and AMC Surety Sites. The M41 Protection Assessment Test System (PATS) checks out the readiness of a protective mask while worn by an individual. It also can be used to screen for unserviceable masks and assists in training personnel on the proper wearing and fitting of the mask.

CHARACTERISTICS: The M40A1, M42A2 and M45 masks have a silicone rubber facepiece with an in-turned peripheral face seal and binocular rigid lens system. The basic mask, the M40A1, replaces all previously fielded masks. It includes a face-mounted canister with NATO standard threads (gas and aerosol filter) which can be worn on either the right or left cheek and includes a drink tube, and clear and tinted lens outserts. When the canister is attached to a connection hose and equipped with a canister harness, larger mask carrier, and a microphone, the mask becomes the M42A2 which is used by all combat vehicle crew personnel. The interchangeability has also permitted the repair of masks using a facepiece assembly, while retaining other existing, undamaged parts instead of a total replacement a significant cost and time savings. The M45 is designed with close-fitting eye lenses, and interchangeable nose cups, to permit fitting an increased range of soldiers. This unique design permits operation of aircraft sighting systems and night vision devices without the aid of forced ventilation air. The PATS now permits verification that the fit of the mask to the soldier's face is acceptable and that there are no critical leaks in the mask system.

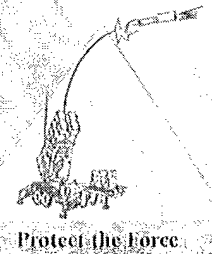
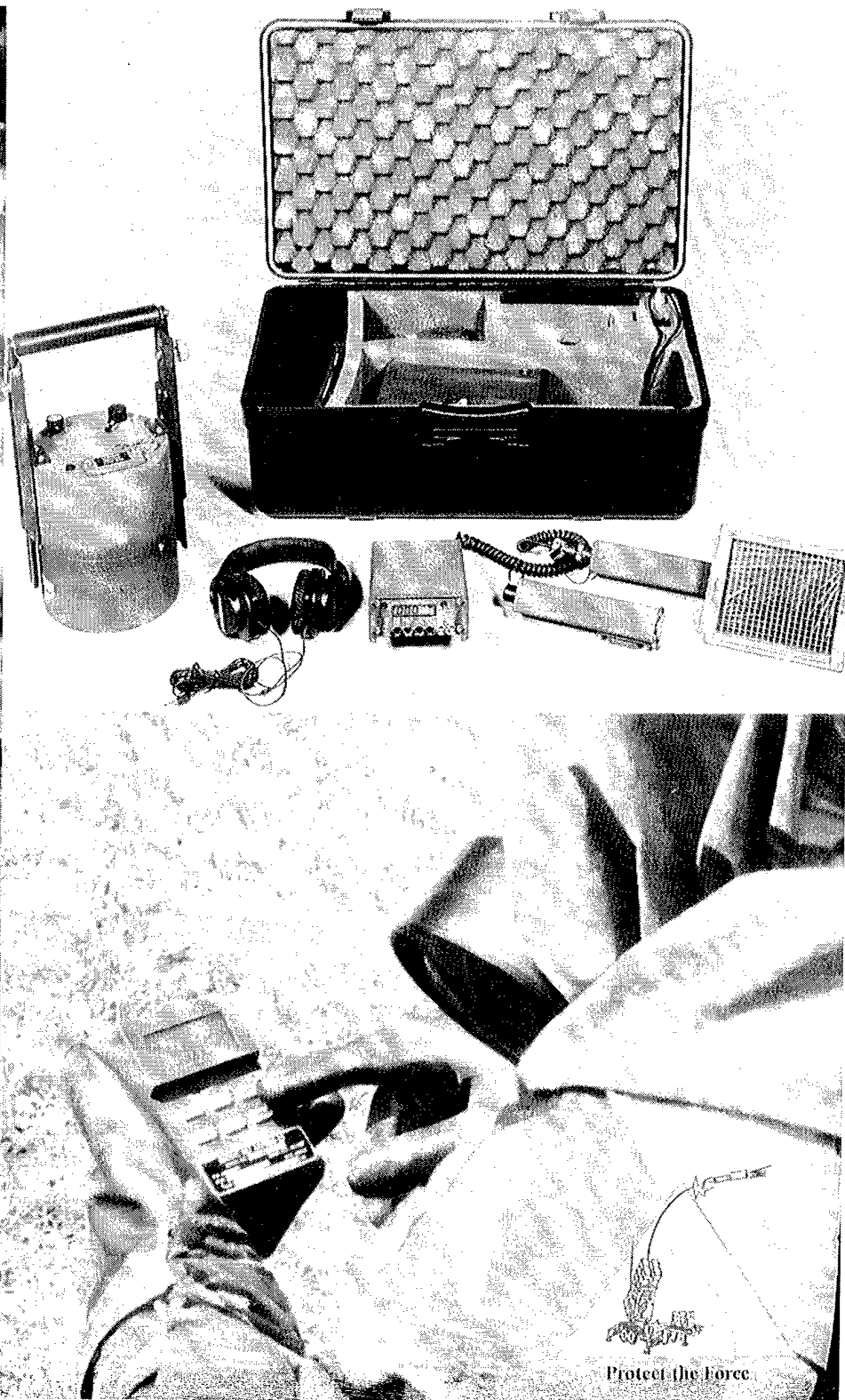
FOREIGN COUNTERPART: Britain: S10

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: Army is currently conducting negotiations for the award of a multi-year contract for the production of M40 and M42 masks. Award is scheduled for October 1996. More than one million M40 Family masks have already been fielded. Replacement of all combat vehicle crew masks with the M42A2 model has been requested but is awaiting additional funding for their procurement, previously unplanned. The M45 initial production contract is planned for award in 2QFY97. Contract awarded in November 1996.

PROJECTED ACTIVITIES: Continued production of M40 Series.

PRIME CONTRACTOR: ILC Dover (Dover, DE)
Mine Safety Appliances (Pittsburgh, PA)
TSI, Inc (St. Paul, MN)



Protect the Force

PRODUCTION AND DEPLOYMENT

MISSION: Radiac provides individual soldiers and commanders with nuclear radiation detection equipment to allow them to fight effectively and survive on the nuclear battlefield and to minimize nuclear radiation exposure of troops during peacetime missions including peacekeeping, nuclear accident response, recovery of vehicles and equipment contaminated with depleted Uranium and maintenance of equipment containing radioactive material.

CHARACTERISTICS: The United States currently is producing and fielding nuclear detection and monitoring equipment. A family of Radiac equipment has been developed and is being fielded to U.S. forces to upgrade thirty year old technology with digital Radiac equipment that incorporates advances made in modern electronics. The AN/UDR-13 Radiac Set, is a compact, hand-held, pocket-sized tactical radiation meter. It measures and displays both gamma dose rate, and total gamma/neutron cumulative dose in a battlefield environment. The AN/VDR-2 detects, measures and displays gamma dose rate and detects and displays beta radiation. The AN/PDR-75 measures the prompt and residual gamma doses and neutron doses stored on the DT-236 Individual Dosimeter from 1-1000 cGy. The AN/PDR-77 detects and measures alpha, beta, gamma, and x-ray radiation.

FOREIGN COUNTERPART: Many nations have nuclear radiation detectors.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The AN/UDR-13 was type classified standard and began production in May 1996. The AN/VDR-2 and AN/PDR-77 have completed production and are in the final stages of fielding, and the AN/PDR-75 is in its last year of production and in the final stages of fielding.

PROJECTED ACTIVITIES: Projected activities will be to complete fieldings of the Radiac equipment that are in the final stages of production and fielding and to develop the production line and initiate fielding of the AN/UDR-13 Radiac sets.

PRIME CONTRACTOR: Nuclear Research Corp (NRC) (Dover, NJ)



MISSION: The Remote Sensing Chemical Agent Detection (M21) permits early warning of chemical agent hazards through the use of remote sensing alarms.

CHARACTERISTICS: The Army and Marine Corps are currently fielding the first generation of chemical agent vapor detectors capable of sensing and warning of clouds of mustard and nerve agents up to 5 kilometers away from the detector. The M21 Remote Sensing Chemical Agent Alarm is an automatic scanning, passive infrared sensor which detects agent vapor clouds based upon changes in the background infrared spectra caused by the presence of agent vapor. The M21 is currently being fielded and mounts on a tripod. When the M93A1 FOX Nuclear, Biological, and Chemical Reconnaissance System is available, the M21 will mount on a mast on the vehicle, and its alarm system interconnected into the M93A1. It operates only in a fixed, stationary position. The Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD) also uses infrared technology for the sensor system. However, JSLSCAD expands on this by combining emerging technologies in miniaturization and computer power to decrease the size and weight by 60%, permit 360 degree detection on the move, and operation from ground vehicle, sea and aerial platforms.

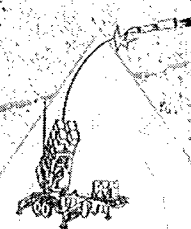
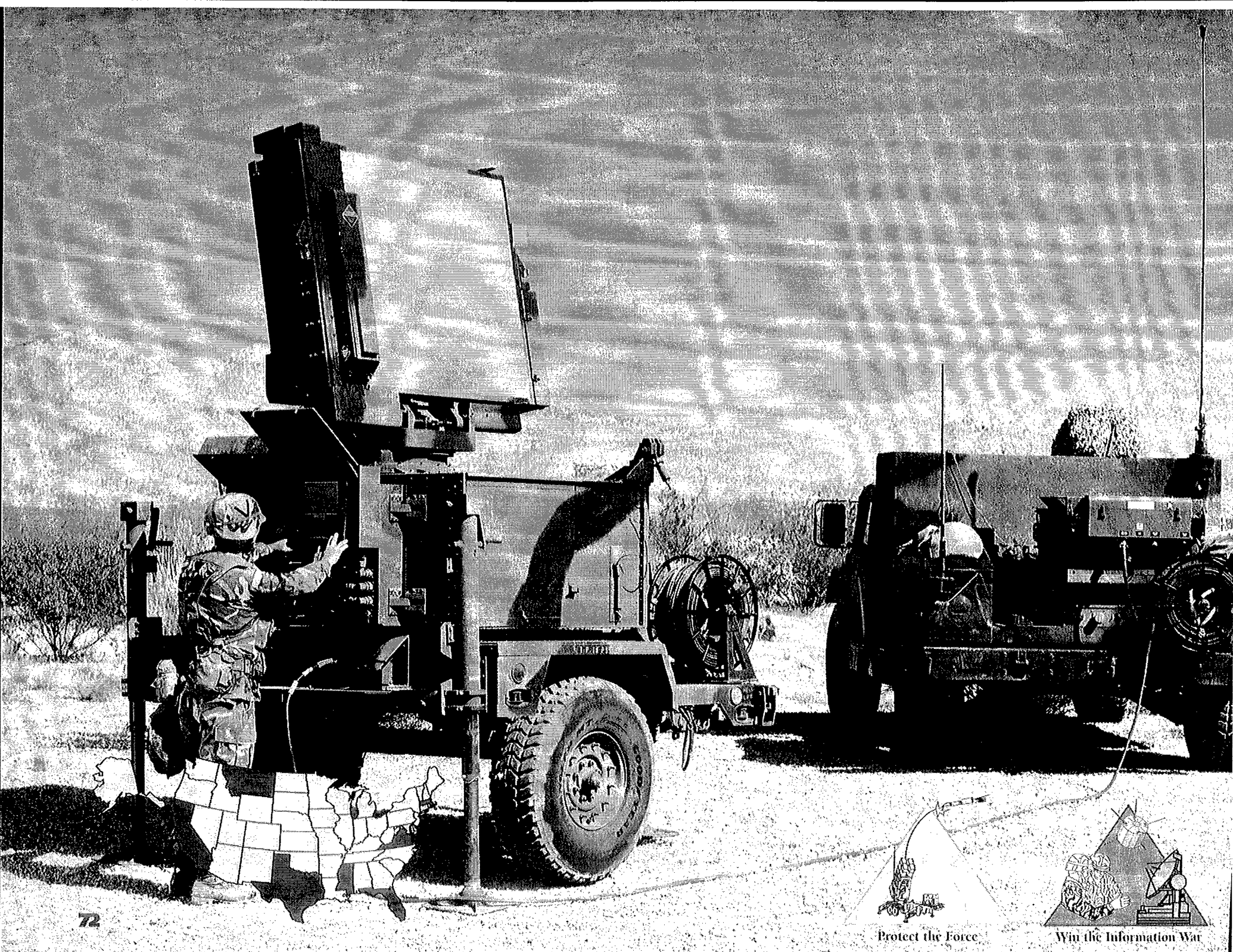
FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

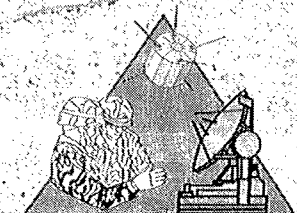
PROGRAM STATUS: Army is currently fielding the M21. The JSLSCAD is in the first year of Engineering and Manufacturing Development. It has successfully demonstrated detection of simulants from both unmanned aerial vehicles, ground vehicles and shipboard sites. Type classification is planned for FY00 with the first units to get JSLSCAD being the Marine Corps.

PROJECTED ACTIVITIES: JSLSCAD Engineering and Manufacturing Development contract award - June 1997.

PRIME CONTRACTOR: M21 production: Intellitec (FL)



Protect the Force.



Win the Information War.

MISSION: The Sentinel is used with the Army's Forward Area Air Defense (FAAD) C2 system to provide critical air surveillance of the forward areas. It automatically detects, tracks, classifies, identifies, and reports targets (cruise missiles, unmanned aerial vehicles, rotary wing and fixed wing aircraft) to Air Defense Weapons Systems located in the Forward Area.

CHARACTERISTICS: The Sentinel consists of a radar-based sensor system with its prime mover/power, Identification Friend or Foe (IFF), and FAAD Command and Control Intelligence (C2I) interfaces. The sensor is an advanced three dimensional battlefield X-band air defense phased-array radar with an instrumented range of 40 km. The Sentinel is capable of operating day or night, in adverse weather conditions, in the battlefield environments of dust, smoke, aerosols, and enemy countermeasures. It provides 360 degree azimuth coverage for acquisition and tracking. The Sentinel contributes to the digital battlefield by automatically detecting, tracking, classifying, identifying, and reporting targets (cruise missiles, unmanned aerial vehicles, rotary wing, and fixed wing aircraft). Targets can be hovering to fast moving, as well as, from nap of the earth to the maximum engagement altitude of FAAD weapons. Very accurate and quick reacting, Sentinel acquires targets sufficiently forward of the Forward Line of Own Troops (FLOT) to improve FAAD weapon reaction time and allow engagement at optimum ranges. The Sentinel integrated IFF reduces the potential for fratricide of Army Aviation and Air Force aircraft. Highly mobile and reliable, the Sentinel Anti-Radiation Missile and Electronic Counter-Measures resistant performance support Army Corps and Divisional Air Defense operations across the full spectrum of conflict. Sentinel uses a HMMWV as its prime mover. It is transportable without disassembly in USAF C-130, C-141, C-17 and C-5 aircraft and U.S. Army CH-47 helicopters. It is designed to be transported as external cargo (sling load) by U.S. Army UH-60 aircraft. The Sentinel is capable of being march-ordered and emplaced by two soldiers. The system is capable of normal operation while attended by one soldier and will not require continuous operator attention to perform normal operations.

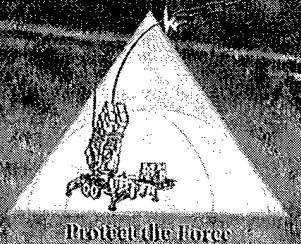
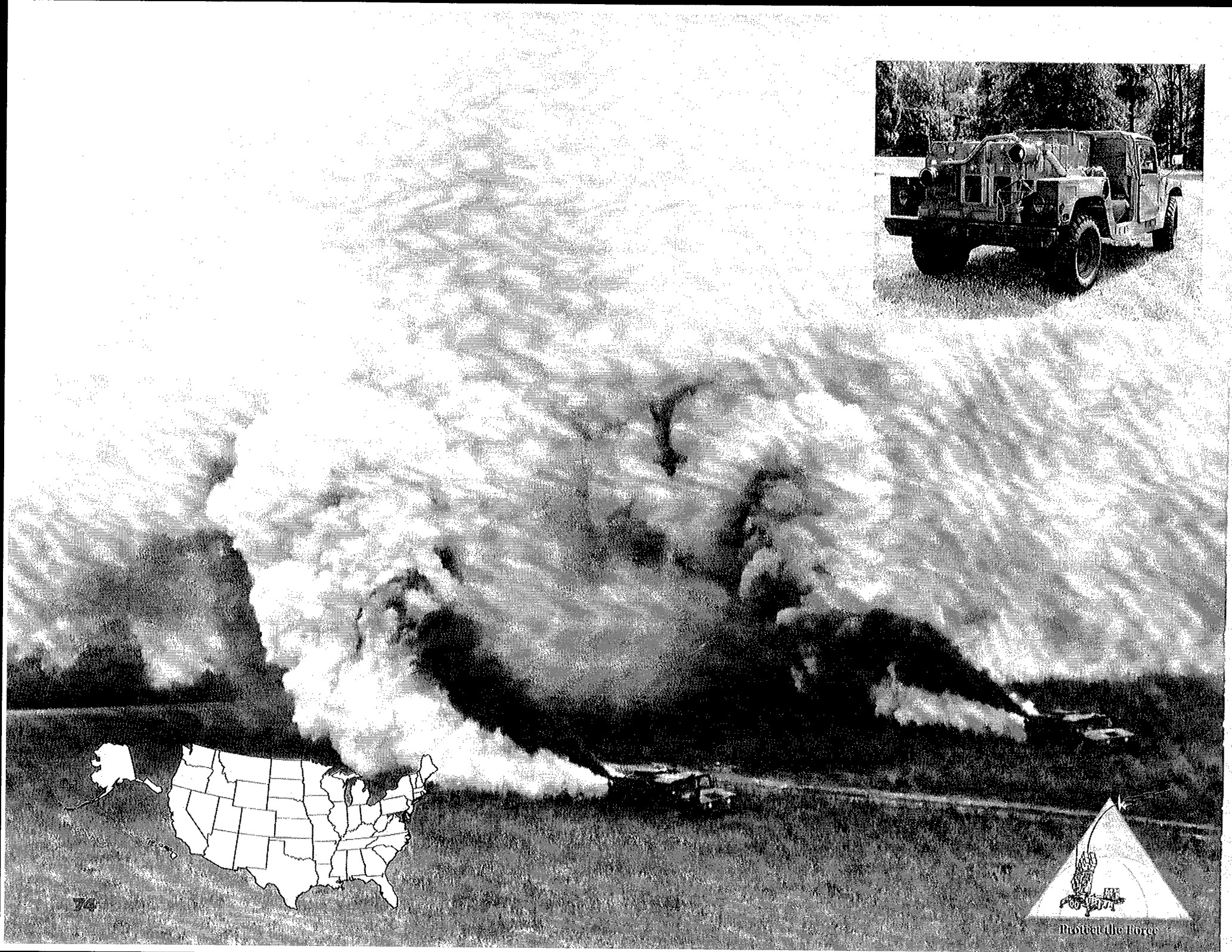
FOREIGN COUNTERPART: Seven other foreign air defense radars which specialize in search and track of low and slow airborne targets are: Contraves LPD-20 (Italy); Skyguard-Improved (Switzerland); Hot Shot 2S6 (Russia); El Dorado (France); Siemens DR-641 (Germany); Rodeo (France) and RA-20S (France).

FOREIGN MILITARY SALES: Turkey

PROGRAM STATUS: Sentinel is in the Production and Deployment phase. The contract was awarded in 2QFY92. First production delivery was received on 2 July 1996.

PROJECTED ACTIVITIES Second Production Option Award FY97.
Production Verification Test (PVT) FY97.
Production Fielding to 41D (1-44) FY97.

PRIME CONTRACTOR: General Motors (Hughes Aircraft Company) (El Segundo, California and Forest, Mississippi)



PRODUCTION AND DEPLOYMENT

Smoke Generator (M56)

MISSION: The mechanical smoke generator (M56) provides large-area obscuration in the visual and infrared spectra.

CHARACTERISTICS: The M56 is a large-area smoke generator system that is mounted on the High Mobility Multipurpose Wheeled Vehicle. The M56 will obscure high-priority targets, such as airfields, bridges, and ammunition depots, as well as convoys and troop movements. The system is modular and uses a gas turbine engine as a power source to disseminate obscurants. The visual screening module is capable of vaporizing fog oil at a rate equal to the M157 smoke generator for up to 60 minutes. The infrared screening modules is capable of disseminating a particulate material to provide 30 minutes of screening.

Gas turbine engine-powered
visual screening (fog oil): 1.33 gal/min
1 hr continuous

Infrared screening (graphite): 10 lb/min
30 min continuous

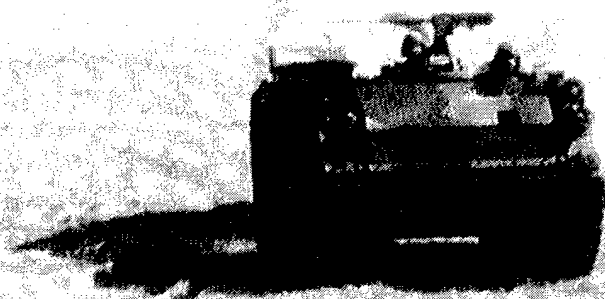
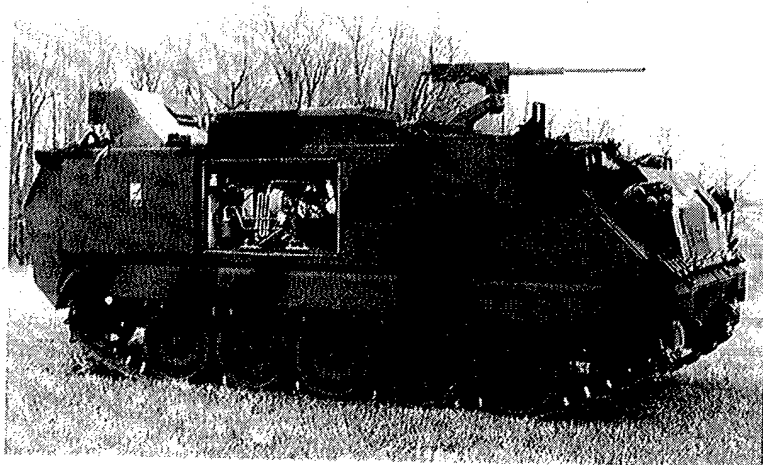
FOREIGN COUNTERPART: Countries using Soviet doctrine emphasize extensive use of smoke during tactical exercises. Many nations, especially those in the Middle East, are beginning to realize the benefits of smoke and have developed programs in this area.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The M56 Smoke Generator was type classified standard in September 1994. A production contract was awarded in March 1995. Fielding will begin in FY97.

PROJECTED ACTIVITIES: The First Unit Equipped (FUE) will be in March 1997.

PRIME CONTRACTOR: Robotic Systems Technology (Westminster, MD)



EMD

MISSION: The mechanical smoke generator (M58) system enhances the maneuver commander's ability to deploy his forces. Six vehicles are organized into two squads, led by the platoon leader in one of the six vehicles. The M58 smoke platoon is task organized to the brigade or divisional commander, who will use them to conceal ground maneuver forces, breaching, river crossing, and recovery operations. Three platoons are assigned to the Mechanized Smoke Company and one platoon to the Divisional Chemical Company.

CHARACTERISTICS: The M58 consists of a mechanized smoke generator system mounted in a modified M113A3 Armored Personnel Carrier. The carrier incorporates the Reliability Improvement of Selected Equipment configuration that includes an upgraded engine and transmission, external fuel tanks, and new driver's station. The 250 hp Detroit Diesel powerpack provides a 20.3 hp/ton ratio at a combat loaded weight of 27,000 pounds. This is sufficient to maintain mobility with the M1 and M2/M3 vehicles the M58 supports. The smoke generator system provides up to 90 minutes of visual and 30 minutes of infrared obscuring screens. A 30-minute millimeter wave obscuring capability will be added as a product improvement. The system includes the Driver's Thermal Viewer that allows it to see through its own smoke clouds and a Gas Particle Filter Unit for operating in an NBC-contaminated environment. A crew of three will operate the M58 system.

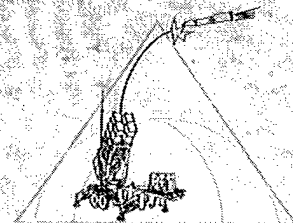
FOREIGN COUNTERPART: Countries using Soviet doctrine emphasize extensive use of smoke during tactical exercises. Many nations, especially those in the Middle East, are beginning to realize the benefits of smoke and have developed programs in this area.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The M58 program entered the production deployment in FY96.

PROJECTED ACTIVITIES: Production is scheduled for FY96-99, with production verification testing scheduled 2QFY97 and fielding through FY97-00.

PRIME CONTRACTOR: Anniston Army Depot (Anniston, AL)
Robotic Systems Technology (Westminster, MD)



Protect the Force

PRODUCTION AND DEPLOYMENT

MISSION: The soldier system's mission is to provide the soldier with everything he wears, carries, and consumes in combat.

CHARACTERISTICS: The soldier system includes improved individual equipment, weapons, clothing, C4I, and subsistence items, to enhance his overall effectiveness and survivability on the battlefield. Soldier system items include several related programs that respond to changing threat requirements and advances in state-of-the-art technology.

Soldier Modernization provides a cohesive plan for the coordinated development of soldier system items and is the roadmap for near-term, mid-term, and far-term efforts. In the near term, one key element of the soldier support and modernization process is the Soldier Enhancement Program (SEP). SEP projects are primarily modified non-developmental items and are focused in four general areas: weapons and munitions, combat clothing and individual equipment (CIE), communications and navigation aids, and food/water and shelter. SEP projects include Shin/Knee Guards for Riot Control; Pistol Belt Extender; Extreme Cold Weather Boot; Ballistic/non-Ballistic Face and Body Shield; Fuel Bar; improved Physical Fitness Uniform; Small Unit Showers; Lightweight Video Reconnaissance System; Individual Soldier Radio; Heavy Sniper Weapon System; M4 Improved Butt Stock; Non-lethal 40 mm, 5.56 mm, and 12 Gauge Munitions; selectable Lightweight Attack Munitions and Armor Crew/infantry Protective Mask XM45 to name a few. Mid-term research and development CIE efforts are focused on the design of lighter-weight equipment, ballistic and laser eye protection, and improved chemical protective clothing that takes advantage of the latest technology and advanced materials. These efforts concentrate on Self-Contained Toxic Environmental Protective Outfit (STEPO), Joint Service Lightweight Integrated Chemical Suit Technology (JSLIST), and improved laser eye protection. Other key elements include the Land Warrior (LW), Air Warrior (AW), and Mounted Warrior (MW) systems. LW is a first generation integrated fighting system for dismounted combat soldiers. It enhances soldiers' battlefield capabilities through the development and integration of Army components and technologies into a cohesive, timely, and cost-effective system. LW subsystems include an individual soldier radio/computer, with embedded global positioning system (GPS), and communications system; enhancements to CIE; integrated headgear with heads-up display and image intensifier; improved chemical/biological mask; and modular weapon system with thermal sight, infrared laser aiming light, and laser rangefinder/digital compass. Far-term efforts include the Force XXI Land Warrior, Objective Individual Combat Weapon (OICW) and other programs which pursue advance technology at the component level for insertion into Land Warrior. Emphasis will be on those areas that provide substantial operational benefits such as OICW or enhanced radio/GPS or integration of components to achieve weight savings for the soldier. Similar efforts have been started for mounted and air crew personnel. AW and MW efforts are being defined.

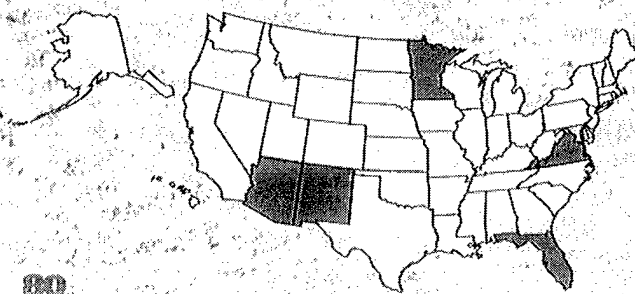
PROGRAM STATUS: There are approximately 100-125 projects per year in various stages of R&D for the Soldier System (CIE/SEP/Land Warrior). Land Warrior (LW), an Army Acquisition Category III program, awarded an R&D contract to Hughes Aircraft Co. on 11 July 1995. Mounted Warrior MNS was approved 10 April 1995. Air Warrior MNS was approved 17 July 1995.

PROJECTED ACTIVITIES: It is projected CIE/SEP, will have over twenty new starts in FY 97 and as many as 24 new items will be proposed for adoption in FY 97. Land Warrior is scheduled for Early Operational Evaluation in the first quarter of FY 97. Mounted Warrior is currently funded in the POM starting in FY 98.

PRIME CONTRACTOR: Aimpoint Inc. (Herndon, VA)
Hughes (El Segundo, CA)
SARCO (Sterling, NJ)

Alliant Tech Systems (Hopkins, MN)
Motorola (Scottsdale, AZ)
Texas Instruments (San Antonio, TX)

DECILOG (Melville, NY)
Olin (East Alton, IL)



SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
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MISSION: Stinger is the short-range air defense missile for combat units (Brigade, Division, and Corps Area) against cruise missiles, unmanned aerial vehicles (UAVs), low flying fixed wing aircraft and helicopters.

CHARACTERISTICS: Stinger is a fire-and-forget infrared missile system which can be fired from a number of ground-to-air and rotary wing platforms. This missile homes in on the heat emitted by either jet or propeller-driven, fixed wing aircraft or helicopters. The Stinger system employs a proportional navigation system that allows it to fly an intercept course to the target. Once the missile has traveled a safe distance from the gunner, its main engine ignites and propels it to the target. The Stinger program has evolved from the redeye, to Stinger Basic, followed by Stinger Post, then Stinger Reprogrammable Microprocessor (Stinger RMP), and finally an upgrade to Stinger Block I. To overcome targets in clutter, funds have been provided in FY95-97 to develop the Stinger Block II. The Stinger Block II focal plane array lens has been demonstrated and is capable of acquiring and tracking targets in clutter at 2.5 times or greater than the acquisition range of the Stinger Block I. Stinger has been fielded on MANPADS, Avenger, Kiowa Warrior, Bradley Linebacker and LAV-AD.

Guidance: Passive infrared and ultraviolet homing

Speed: Supersonic

Navigation: Proportional with lead bias

Weight: 34.5 lb

Diameter: 2.75 in

Length: 60 in

FOREIGN COUNTERPART: Britain: Blowpipe, Javelin Russia: SA-7, SA-14, and SA-16
Sweden: RBS-70

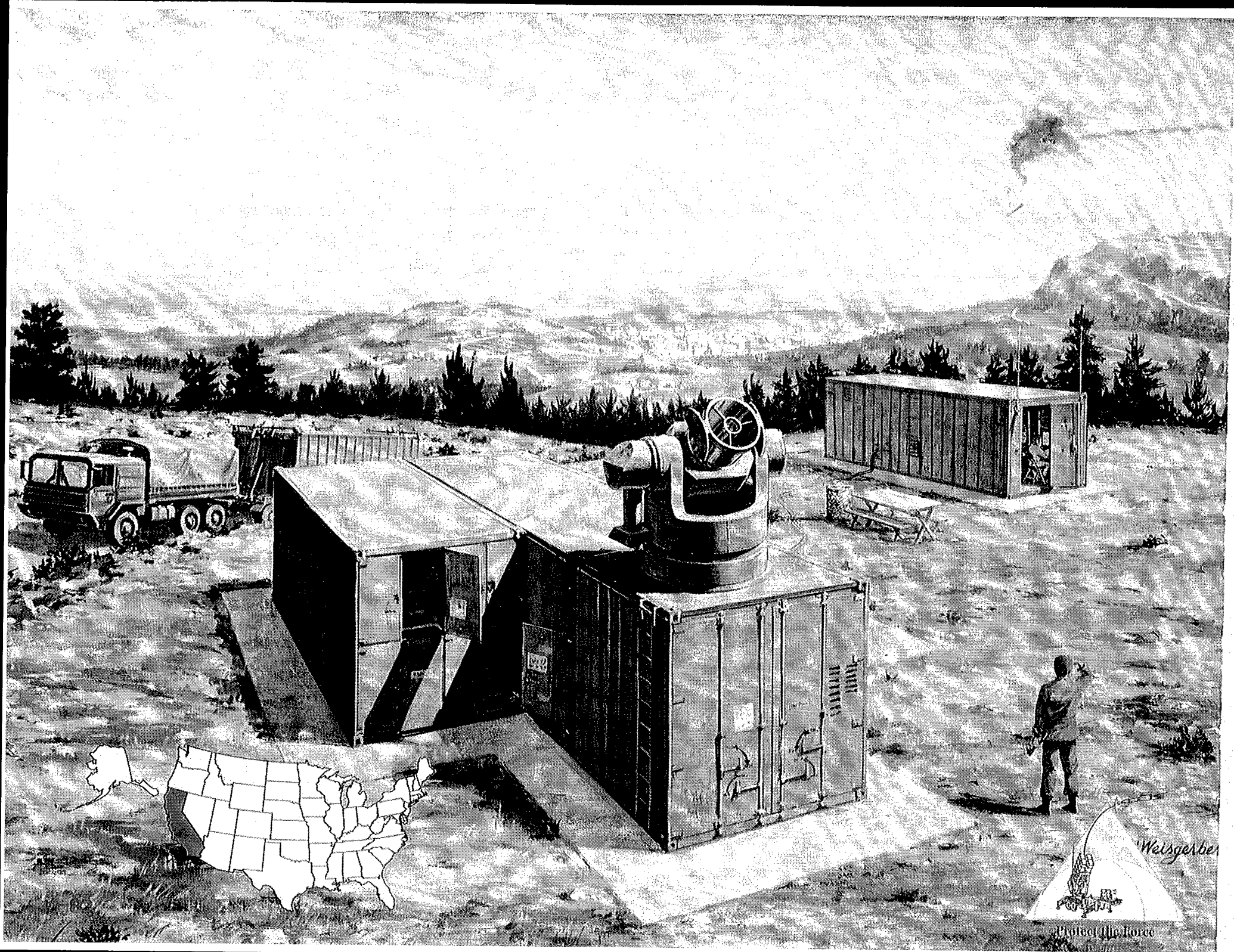
FOREIGN MILITARY SALES: Germany, Denmark, Korea, Netherlands, Switzerland and Taiwan.

PROGRAM STATUS: Stinger-RMP is currently being upgraded to Stinger Block I. The first Stinger Block I was fielded in November 1995. Stinger-RMP was fielded in FY90. Stinger-RMP production was accelerated to meet Desert Shield/Storm requirements. Further improvements to Stinger-RMP performance have been developed under a Block I product improvement program which started in FY94 with fielding in FY96. The Army has initiated the Block I Stinger improvement program to extend the service life and develop improvements to increase accuracy and resistance to countermeasures, effectiveness against near-term, low-observable targets (UAVs and cruise missiles) and standoff helicopters in clutter, and to eliminate the need for super-elevation (a safety hazard when Stinger is fired from a hovering helicopter). The objective Stinger missile is the Stinger Block II with the focal plane array seeker for acquiring, tracking and hitting aerial targets at the kinematic range of the missile. The Army has funded for approximately 11,500 Stinger Block I retrofits.

PROJECTED ACTIVITIES: From the good results obtained in the FY95 tech base effort, the Army plans to continue with a four year FY96-99 Stinger Block 2 focal plane array seeker Demonstration/Validation (DEM/VAL) phase prior to the Engineering and Manufacturing Development (EMD) phase. The Stinger Block II DEM/VAL phase reduces the risk on the EMD phase by proving-out the new seeker technology.

PRIME CONTRACTOR: General Motors (Hughes Aircraft Company) (Tucson, AZ; Pomona, CA; Farmington, NM)

* See appendix for list of subcontractors.



SCIENCE AND TECHNOLOGY

MISSION: The overarching objective of the Tactical High Energy Laser (THEL) Advanced Concept Technology Demonstration (ACTD) is to evaluate the effectiveness of a THEL in negating the threat posed by Katyusha and other short-range artillery rockets. The THEL ACTD Demonstrator mission provides for early operational assessment of the acquisition and close-in engagement problems associated with the evolving air threat of short to medium range targets within the Air Defense Architectures, which will significantly enhance the defensive coverage to combat forces and theater level assets.

CHARACTERISTICS: The THEL ACTD demonstrator will be a deuterium fluoride chemical laser with a minimum of 60 seconds of continuous total run time. The Pointer Tracker/Beam Control system will be capable of providing + 200 degree coverage in azimuth and -5 to 95 degrees coverage in elevation, and have the ability to accept cueing from external sensors in existing air defense architectures. The demonstrator, including the laser device, pointer tracker, support equipment, and command, control, communication, and intelligence subsystems, will consist of modules enclosed in standard shipping containers that are road transportable and air transportable. The THEL demonstrator will also be configured for field setup and testing at the High Energy Laser Systems Test Facility and remote locations in Israel, and demonstrate equivalent system performance to ACTD phase one criteria at Capistrano Test Site (CTS), Capistrano, CA.

FOREIGN COUNTERPART: No known foreign counterpart.

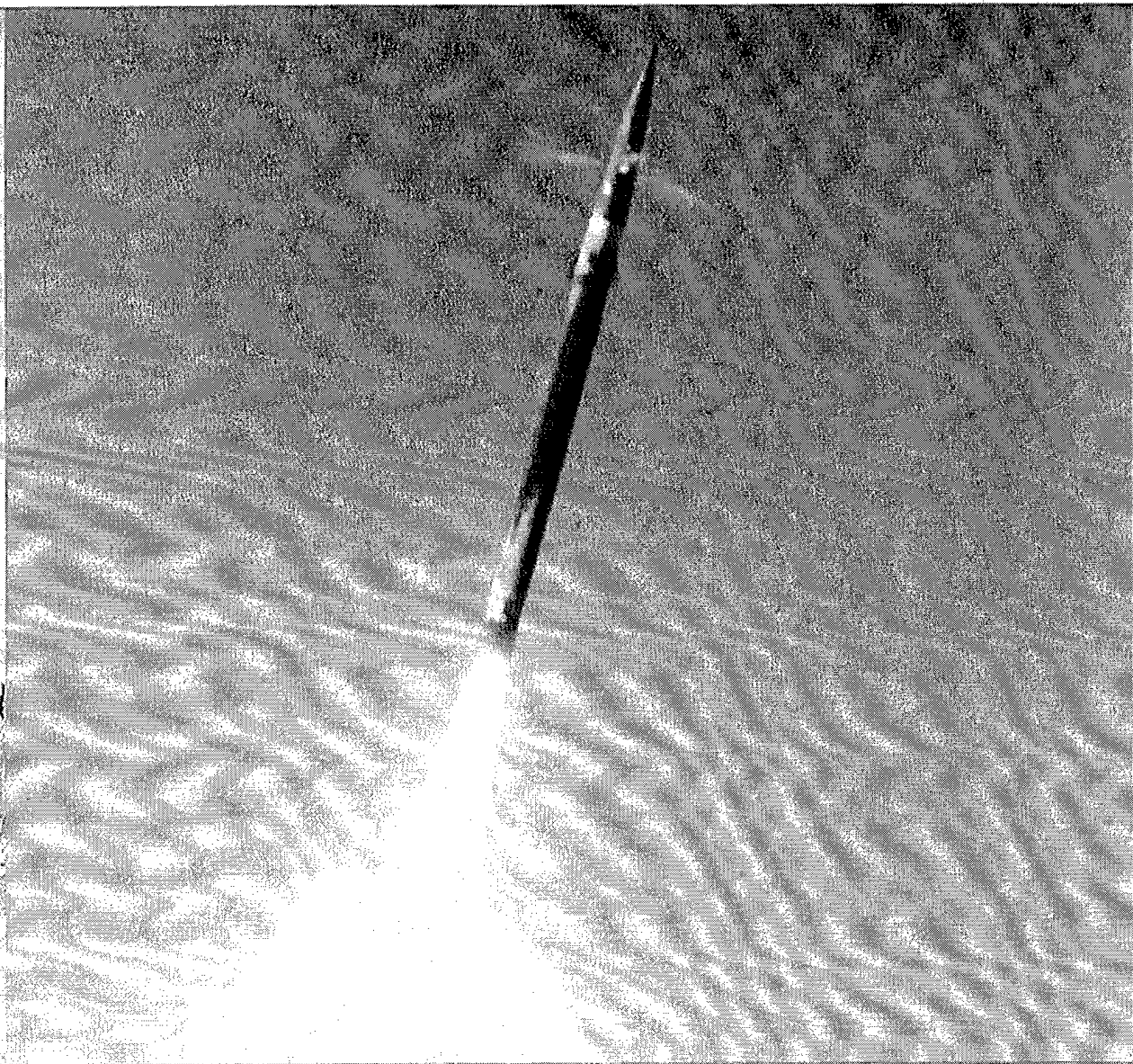
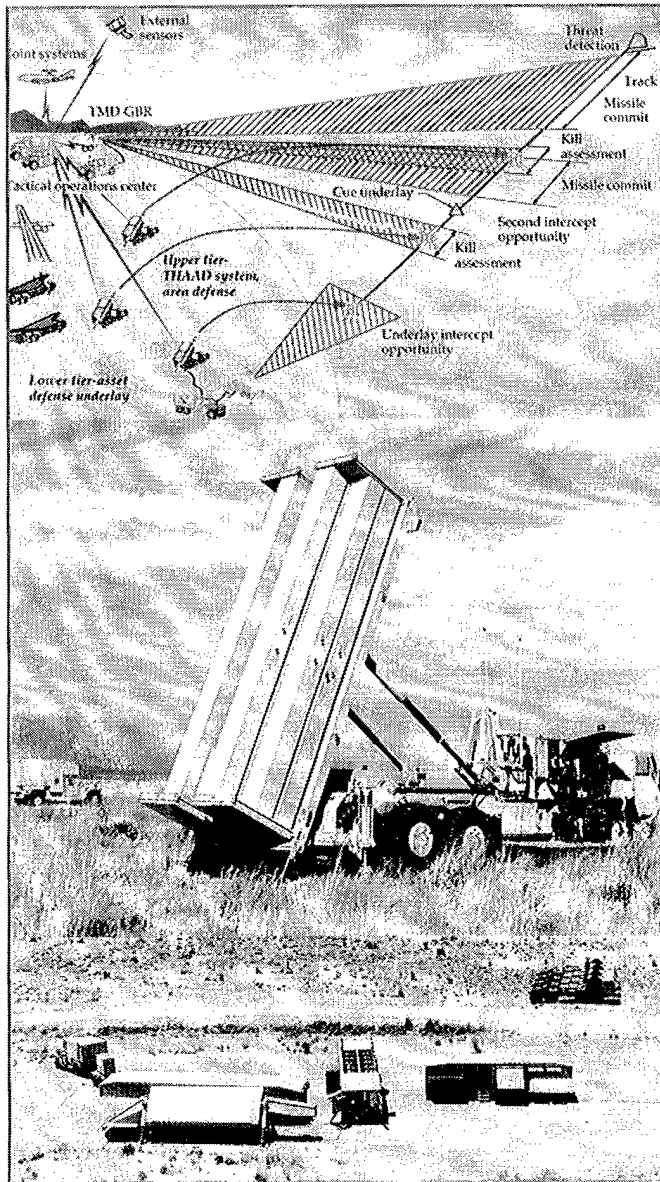
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: On 29 April 1996, then Prime Minister of Israel, Shimon Peres, met with President Clinton and Secretary of Defense Perry. During the meeting, the U.S. made a commitment to assist Israel in the development of a THEL demonstrator for the ultimate purpose of defeating the threat posed by Katyusha and other short range rockets against the cities in northern Israel. By memorandum dated 11 May 1996, Secretary of Defense Perry established the THEL ACTD program. The Secretary of Defense established the end of 1997 as the completion date for the THEL ACTD. The Department of Defense and the Israeli Ministry of Defense executed a Memorandum of Agreement on 18 July 1996 which delineates the THEL program. The MOA provides for performance of the ACTD, in principle, during calendar years 1996-1997. On 12 Sept 1996 a memorandum was generated by Assistant Secretary of the Army, Gilbert F. Decker to the Deputy Under Secretary of Defense recommending the completion date of 31 Mar 1998 for the THEL ACTD Program. On 22-24 July 1996 the Concept Design Review was held establishing requirements for the follow on Detailed Engineering Design Review. The THEL Project Management Office has been established and is assigned to the Space and Strategic Defense Command.

PROJECTED ACTIVITIES:

- Manufacturing Readiness Reviews, 1QFY97-2QFY97.
- THEL ACTD Systems Integration Testing at CTS, Jan 1998 - Mar 1998.

PRIME CONTRACTOR: TRW currently under letter contract.



MISSION: The Theater High Altitude Area Defense (THAAD) system will fill the void of a large area defense of tactical ballistic missile threats, including weapons of mass destruction, operating in the endo- and exo-atmosphere and directed against military forces and strategic geopolitical assets.

CHARACTERISTICS: The THAAD system is a Theater Missile Defense (TMD) weapon system designed to intercept short- and intermediate-range missile threats that will employ increasingly sophisticated warhead technologies. The THAAD system will augment existing and other planned TMD capabilities by engaging threat missiles at higher altitudes and at longer ranges. This intercept capability negates the threat use of weapons of mass destruction. THAAD's hit-to-kill guidance approach provides a high degree of lethality compared to existing systems with fragmentation warheads.

The THAAD system consists of missiles, launchers, Battle Management/Command, Control, Communication, Computers, and Intelligence (BM/C4I) elements, radars, and support equipment. The missile is a hypervelocity, single stage, solid propellant booster and a unique endo-/exo-atmospheric kill vehicle (KV). The hit-to-kill technology KV, designed to destroy threat warheads, guides to target using an infrared homing seeker. The launcher utilizes the Army standard Palletized Loading System (PLS) 16-ton truck with a capacity of at least 8 missile rounds on a missile pack. The HMMWV based BM/C4I centers are a set of highly robust and configurable shelters to ensure maximum flexibility on the modern battlefield. These units interface and coordinate with the Theater Air Defense C2 system and will control both the Engagement and Force Operations for the THAAD system. The BM/C4I will provide automated acquisition and identification of TBM threats, process and disseminate track data, assign weapons, monitor engagements, and guide sensor operations. The THAAD X-band phased array radar acquires the target at long ranges, tracks the target and provides in-flight updates to the THAAD interceptor prior to intercept. The radar also performs kill assessment to support the decision to commit additional interceptors or to cue lower tier systems such as the Patriot System. The THAAD System will support passive defense and attack operations by providing impact point predictions and launch point estimations. The THAAD system will be fully transportable by C141/C5/C17 military aircraft. Once in theater, the system will utilize Army standard movers to be highly mobile on highways and unimproved roads. These system capabilities will allow THAAD to be rapidly deployed to any theater on short notice. Current plans call for a User Operational Evaluation System to be available in 1998 to gain user input into the final system design and to provide a Commander In Chief with a prototype system to use in the case of an emergency.

FOREIGN COUNTERPART:

France and Italy:
Germany:

THAAD System

SAAM; SAMP/N; SAMP/T
MSAM

THAAD Radar

Russia: Hen House; Dog House; and Try Adds radars

FOREIGN MILITARY SALES:

No foreign military sales.

PROGRAM STATUS:

The THAAD program is currently in the Demonstration and Validation (DEM/VAL) phase. The contract for DEM/VAL was awarded on 4 September 1992. Flight testing began in April 1995. Completion and delivery of a User Operational Evaluation System (UOES) prototype is scheduled for availability in FY98 and final delivery in FY99.

PROJECTED ACTIVITIES:

DEM/VAL flight tests will provide interceptor and system data to support the exercise of the UOES option and the Milestone II decision in FY98.

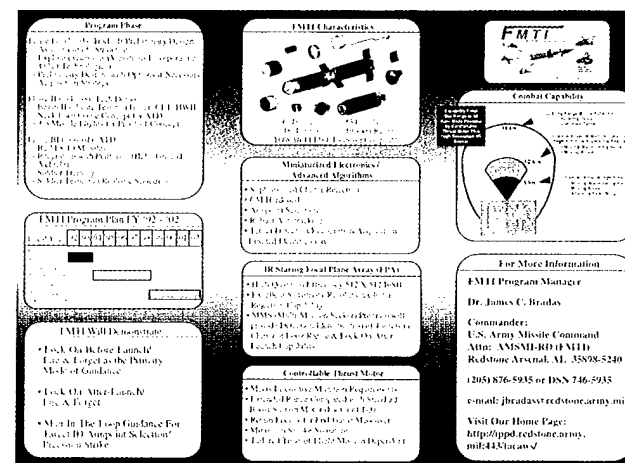
PRIME CONTRACTOR:

THAAD System: Lockheed Martin (Lockheed Martin Missiles and Space Co.) (Sunnyvale, CA)
THAAD Radar: Raytheon (Bedford, MA) (as of FY97 Raytheon will be a prime sub to Lockheed Martin)

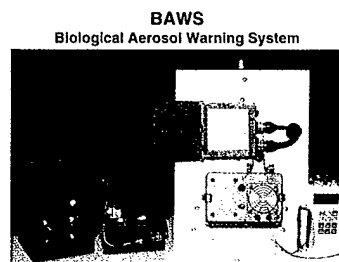
Future Missile Technology Integration (FMTI) (1994-1998)

FMTI will demonstrate lightweight, multirole missile technology in support of ground-to-ground, ground-to-air, air-to-air, and air-to-ground missions with an emphasis on ground-to-ground technology with a multimission growth potential. The missile system demonstration includes the integration of guidance, control, propulsion, airframe and warhead technologies capable of performing in high clutter/obscurants, and adverse weather and countermeasure conditions. Missile control and guidance system technology will explore capabilities such as lock-on-before/lock-on-after launch, fire-and-forget, guidance, signal and image processing, and wideband secure radio frequency data links.

FMTI has five primary goals: superior antiarmor fire-and-forget lethality in clutter up to five kilometers; the ability to engage armored vehicles and suppressed helicopters in clutter at extended ranges; multirole capability including ground-to-ground, ground-to-air, air-to-air, and air-to-ground; multiplatform launch capability from the HMMWV, Bradley fighting vehicle, Avenger, RAH-66 Comanche, AH-64 Apache, OH-58D Kiowa Warrior, light armored vehicle and AH-1W Cobra; and TOW and Hellfire launcher compatible. The program is structured in three phases: Phase I, concept evaluation, fiscal 1992-1993 (that is, design, simulation); Phase II, technology demonstration, fiscal 1994-1997 (that is, five missiles fabrication, tower and captive flight test); and Phase III, proposed advanced technology demonstration (ATD), fiscal 1999-2002 (that is, platform integration, flight and ground testing). Supports: TOW follow-on



Integrated Biodetection Advanced Technology Demonstration (ATD) (1996-1999)

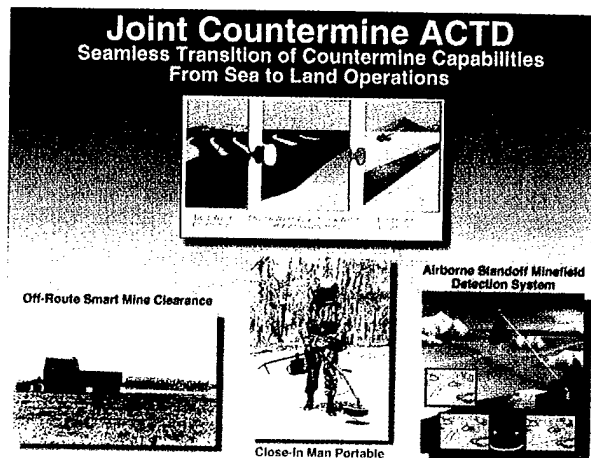


This ATD will demonstrate point detection and remote early warning of biological agents. The ATD will focus on point biosensors that will incorporate automated DNA technology to increase reliability, stability, sensitivity and response time. This ATD will also demonstrate a remote biological aerosol warning capability using small, micro-ultraviolet laser-based, fluorescent particle counters. The key to the ATD is to demonstrate the technologies in a unified effort in a battlefield exercise providing detection and warning of biological agents before forces are affected, thus reducing casualties.

Joint Combat Identification Advanced Concept Technology Demonstration (ACTD) (1996-1999)

This ACTD is aimed at solving the combat identification problem underscored by the lessons learned from Operation Desert Storm. The effort will build upon the Battlefield Combat Identification System (BCIS), which is a millimeter wave question and answer, target ID system developed for ground vehicle platforms. The ACTD will validate the architecture for, and demonstrate an affordable, integrated ground-to-ground and air-to-ground combat ID capability. An enhanced version of BCIS with digital data link for improved situation awareness and various air-to-ground concepts including direct sensing target ID, "don't shoot me" communications nets and situation awareness through the commander's and gunner's sight will be demonstrated in the Force XXI exercise and the All Service Combat Identification Evaluation Test field exercise in FY 97. Concepts will be evaluated for lightweight combat identification for the dismounted soldier within battlelab warfighting experiments in FY 97.

**Joint Countermine
Advanced Concept Technology
Demonstration (ACTD)**



The Joint Countermine (JCM) ACTD will demonstrate seamless MCM operations by integrating Army, Navy, and Marine Corps technology developments and fielded military equipment. This ACTD will employ eleven (11) prototypes from Advanced Technology Demonstrations and preproduction phases of the development cycle along with fielded equipment in live demonstrations. In addition, a robust modeling and simulation effort, Joint Countermine Operational Simulation (JCOS), will expand the information the information base obtained from the live demonstrations through constructive modeling and distributed interactive simulation. C4I connectivity and notional architectures for MCM operations will also be an integral part of the JCM ACTD. The ACTD will be completed in two live demonstrations. Demonstration I is focused on land combat countermining and is scheduled to be conducted in 4QFY97. Demonstration II focuses

on deep and shallow water countermining and will be completed in 2QFY98.

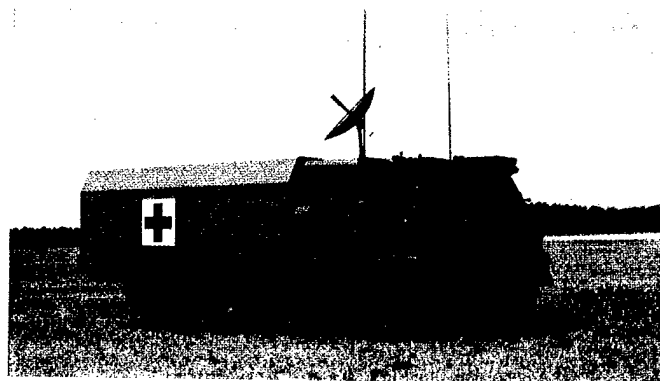
**Force XXI Land Warrior
(1996-FY00)**

The Force XXI Land Warrior program is the Land Warrior (LW) Science and Technology (S&T) program which addresses the critical Army need to enhance the performance, lethality, survivability, and sustainment of the individual soldier. Force XXI Land Warrior efforts focus on technology insertions to the LW backbone which will enhance the LW system or provide improved capabilities. This program will be utilized to further reduce the LW fielding risks and to insure that future LW procurements are upgraded with current technological advancements. This program leverages the commercial microelectronics and telecommunications industries to achieve lightweight, miniaturized components. Supports: Land Warrior and U.S. Marine Corps.



**Medical Research and
Development**

1. Advanced Technology. The Commander, U.S. Army Medical Research and Materiel Command (USAMRMC), is the Army Medical Commands chief technology officer. He is responsible for enhancing battlefield medical care by adapting new technologies that will significantly reduce deaths on the battlefield through the projection of life-saving medical expertise to the front lines. These technologies will enhance the delivery of care at each echelon of the field medical care system by providing vastly enhanced communication links for diagnostic consultation between deployed physicians and specialty experts in the United States.



The USAMRMC's Medical Advanced Technology Management Office (MATMO) has coordinated deployments of telemedicine technology in support of US forces in Macedonia, Croatia and Haiti. This technology has been incorporated into Advanced Warfighter Experiment (AWE) Demonstrations of the Army's digitized battlefield for the 21st century. Advances in Army medicine have thus been fully integrated into the broader Army vision of a digital future.

2. Infectious Diseases. The first vaccine for hepatitis A was recently licensed by the U.S. Food and Drug Administration. Medical researchers assigned to the U.S. Army Medical Research and Materiel Command's Walter Reed Army Institute of Research conducted the large-scale clinical trials that made licensure possible. Army participation in the lengthy process of approving the new vaccine helps to insure the availability of the promising new product for future soldiers deploying to areas of the world in which hepatitis A is an endemic disease threat.

Researchers at the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) at Fort Detrick, MD, while continuing to develop improved medical countermeasures to classical biological warfare agents, have increased their efforts in global surveillance of new and emerging infectious diseases. Recent outbreaks of Hanta virus in the United States and Ebola virus in Zaire have served to remind military and civilian medical communities of the importance of disease surveillance. USAMRIID scientists collaborate on a continuing basis with colleagues at the World Health Organization, the U.S. Centers for Disease Control and Prevention, and other agencies in monitoring emerging threats. USAMRIID is also involved in basic research efforts to develop preventative products to protect military personnel from these new threats.

3. Combat Casualty Care. Pilot lot production of purified hemoglobin for blood substitute research has resumed at the Walter Reed Army Institute of Research. The production facility was temporarily mothballed during the relocation of the blood research program from the Letterman Army Institute of Research. Research also continues on cell cultures in microgravity, using the Space Shuttle as a platform. These studies hold promise for future advances in wound healing.

Both the Combat Casualty Care Research Program and the Operational Medicine Research Programs have established closer ties to the Soldier Systems Command, outlining medical interfaces with and medical components of the 21st Century Land Warrior.

4. Persian Gulf Illness. The USAMRMC is investigating possible causes of Persian Gulf-related illnesses on several fronts. The USAMRMC supported a toxicological study of three chemicals used in protective products during the Gulf War. Deet, the active ingredient in the Army's insect repellent; permethrin, a pesticide applied to military uniforms which supplements the repellent formulation applied to the skin; and pyridostigmine bromide, a drug used as a pretreatment for protection from chemical warfare agents, were studied in the test. The purpose of the toxicological study was to assess the toxicity of the three chemicals individually, and in combination. The study establishes that there is some synergy, or enhanced toxicity of the products when combined, but at exposure levels far above those resulting from normal, recommended use.

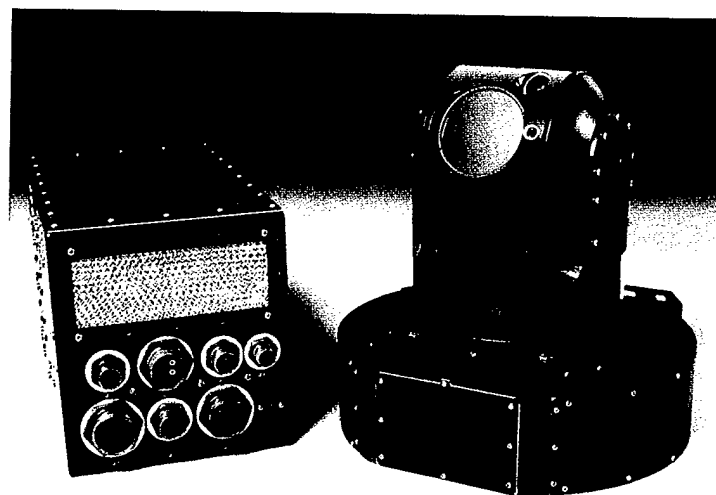
The USAMRMC has published requests for proposals for research on Persian Gulf illnesses, as a result of a Congressional appropriation of \$5 million for research on these illnesses. The USAMRMC is managing the research, which will be conducted by non-federal agencies. Proposals will be peer-reviewed by expert panels, and research grants will be awarded based on the merits of the proposals.

5. Special Interest Programs. The USAMRMC continues to manage Congressionally-mandated research programs in breast cancer and women's health. The Breast Cancer Research Program awarded approximately 750 grants and contracts with FY 1993, FY 1994, and FY 1995 funds. Proposals are now being evaluated for additional research to be supported by a fourth appropriation for breast cancer research from the 1996 budget.

The Defense Women's Health Research Program investigates health problems commonly encountered by military women. Appropriations of \$40 million from the FY 94 and 95 budgets are supporting a variety of in-house military and contractor research efforts. This program is consistent with a trend in civilian medical research to balance the traditional focus of medical research on male subjects by directing more research at women and women's health issues.

Mine Hunter/Killer Advanced Technology Demonstration (ATD) (98-01) The Mine Hunter/Killer will demonstrate a conceptual vehicular mounted system to autonomously detect, locate, and neutralize land mines at tactical maneuver speeds. The technologies will be adaptable to light vehicle platforms (HMMWV) and medium or heavy armored vehicles to support combat maneuver and rear area logistics/operations other than war missions. The system will automatically detect, classify, and geolocate metallic and non-metallic mines. The position/location information will be used to direct a neutralizer to the individual mine. This classification and location data will also be communicated to other tactical units. Standoff detection sensors that will be demonstrated include infrared (IR) and forward looking radar. Standoff neutralization devices to be evaluated are kinetic energy projectiles, shaped charge explosives, and emerging directed energy beams. Supports: Joint Countermine ACTD, Ground Stand-off Mine Detection System, Breacher P3I

Multispectral Countermeasures Advanced Technology Demonstration (ATD) (97-00) The Multispectral Countermeasures ATD will demonstrate advancements in laser technology, energy transmission, and jamming techniques for an all laser solution to infrared countermeasures and provide the technology baseline for product improvements to the Advanced Threat Infrared Countermeasure/Common Missile Warning System (ATIRCM/CMWS). These technologies will provide the capability to counter both present and future imaging focal plane array and non-imaging missile seekers. A tunable multiline laser with a fiber optic transmission line, advanced jamming algorithms will be live fire tested using the ATIRCM as a testbed. The goal is a 3X reduction in laser jam head volume, a 35 pound weight reduction, a 2X reduction in ATIRCM/CMWS power consumption, and a 4X increase in jammer power. Supports: Tri-Service ATIRCM/CMWS



Nuclear, Biological, Chemical (NBC) Defense Science and Technology Program The NBC defense science and technology program includes technologies for individual physical and medical protection, collective protection, decontamination and contamination avoidance. Individual protective technologies will offer increased respiratory protection against current and emerging NBC threats while providing improved weapons systems and minimizing the physiological burden imposed by NBC protective equipment. Individual protective equipment also includes advanced materials for clothing which will provide enhanced protection and reduced heat stress. Medical chemical-biological defenses will provide new pretreatments for nerve agents, topical skin protectants for vesicants, new vaccines for biological threats, and novel therapies for chemical and biological threats.

Improved casualty care practices doctrine will increase the return-to-duty rate, thus adding to force sustainment. Collective protection technologies will investigate continuous, regenerable filtration requiring minimal logistics. New decontamination technologies will minimize logistics burden, reduce contamination impact on mission effectiveness and have low environmental impact. The emphasis on the contamination avoidance component of NBC defense includes technologies for multiagent sensor, point detection and remote early warning for real-time detection and identification of chemical and biological agents. In addition, detectors will be more compact, so they may be placed on a variety of platforms and will not have large space and power requirements.



Information is power. On the battlefield, information is deadly power. The Army approach to information warfare emphasizes both offense and defense. The Army of tomorrow will deny information to the enemy through secure communications and direct attack against enemy Command, Control, Communications, Computers and Intelligence (C4I) assets. The Army in conjunction with the other services will also expand its own C4I assets. This will give all U.S. forces a complete picture of the battlefield and securely transmit that picture to all units. As part of this effort, the Army is building the Army Battle Command System (ABCS), a seamless, secure and adaptable information architecture that will link battle commanders at all echelons. Most of the systems listed in this section are components of ABCS. Winning the Information War is about gathering as much information as possible on the enemy (e.g. numbers and types of vehicles, units and command centers) and on your own forces and then moving that information to the soldiers that can act on it, be they a transportation company or an armored battalion.

In order to build that complete picture of the theater, the Army must acquire a new range of information systems. The first elements to acquire are the intelligence and sensor systems that will gather all the information about the enemy and about friendly forces as well. The Guardrail/Common Sensor (GR/CS), the Ground Based Common Sensor (GBCS), the Tactical Unmanned Aerial Vehicle (UAV), and Trackwolf are a few of the systems that will gather the information. Other platforms like the Comanche helicopter will figure prominently in intelligence gathering through an armed reconnaissance role. A subset of this category includes the systems that highlight information about friendly forces. As an example, the NAVSTAR Global Positioning System (GPS) receivers provide precise location data to soldiers for targeting and navigation.

The second element of a new information architecture are the communications systems needed to move data securely and rapidly from point to point. In this category are systems like the Single Channel Ground Air Radio System (SINCGARS), Digital Transmission Assemblages, Circuit Switches/Message Switches, Mobile Subscriber Equipment (MSE) and Satellite Communications (SATCOM). These systems create a powerful network that will permit the movement of large amounts of data from any source to any soldier.

The final element is the computer hardware and software that will process the raw data into usable products. The systems in the first two categories will greatly increase the amount of information available to every soldier in the field. New computer systems are needed to manage the increased flow of information. Common Hardware and Software (CHS) and the Standard Army Management Information System (STAMIS) will ensure that the Army Information architecture remains compatible and interchangeable. Advanced software systems, like the Army Data Distribution System (ADDS), the Advanced Field Artillery Tactical Data System (AFATDS) and the All Source Analysis System (ASAS) will provide the means for analyzing and using the data. These are the systems that the soldiers will use to determine their next priority per the commander's intent.

The entire package of systems will create an Army that will be able to gain Information Dominance over any enemy. Tomorrow's Army will have unprecedented awareness of its own situation and needs and be able to acquire much more information about the enemy in terms of strength, location and intent. Commanders will be able to move resources (be they supplies or combat units) to where they can have the greatest impact on the battle. The Army seeks to provide its commanders and soldiers with total situational awareness, such that they will dominate the battlefield.



SCIENCE AND TECHNOLOGY

CONCEPT

DEM/VAL

EMD

PRODUCTION AND DEPLOYMENT

OPERATIONS AND SUPPORT

Battlespace Command and Control ATD

Digital Battlefield Communications ATD

Owning the Weather

Rapid Battlefield Visualization ACTD

Tactical Unmanned Aerial Vehicle (TUAV)

Tactical Unmanned Vehicle (TUV)

Comanche

Advanced Field Artillery Tactical Data System (AFATDS)

Advanced Quick Fix (AQF)

All Source Analysis System (ASAS)

Army Global Command and Control System (AGCCS)

Forward Area Air Defense Command and Control (FAADC²)

Ground-Based Common Sensor (GBCS)

Integrated System Control (ISYSCON)

Joint Surveillance Target Attack Radar System Ground Station Module (JSTARS GSSM)

Maneuver Control System (MCS)

Milstar (Army)

Air Defense Artillery Tactical Operation Centers (ADA TOCs)

Airborne Reconnaissance Low (ARL)

Army Data Distribution System (ADDS)

Common Hardware/Software (CHS)

Enhanced Trackwolf (ET)

Guardrail/Common Sensor (GRCS)

Integrated Meteorological System (IMETS)

Joint Tactical Terminal (JTT)

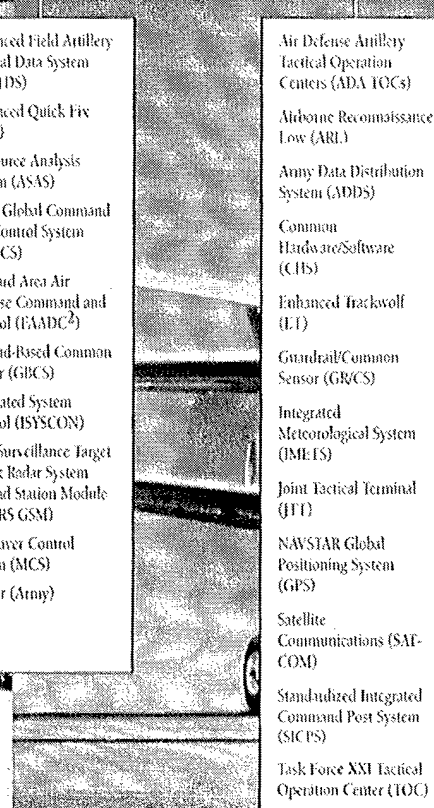
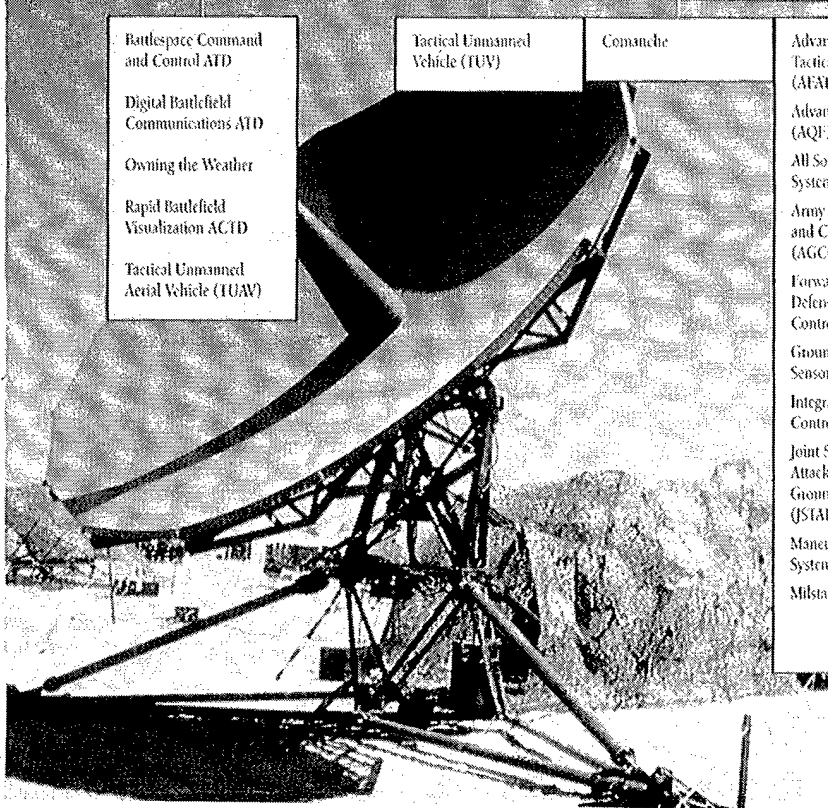
NAVSTAR Global Positioning System (GPS)

Satellite Communications (SATCOM)

Standardized Integrated Command Post System (SICPS)

Task Force XXI Tactical Operation Center (TOC)

Circuit Switch and Message Switch
Digital Transmission Assemblies
Mobile Subscriber Equipment (MSE)
Single Channel Ground and Airborne Radio System (SINCGARS)





Win the Information War

Conduct Precision Strike

EMD

MISSION: The Advanced Field Artillery Tactical Data System (AFATDS) is the automated command and control system for the fire support of the future. It provides the maneuver commander the capability to plan for and execute the attack on the right target, at the right time with the right munitions, and the right weapons system. It provides the maximum utilization of the fire support assets available on an expanding battlefield. The AFATDS will provide the multiservice (Army and Marine Corps) automated Fire Support Command, Control and Communications portion of the Army Battle Command System (ABCS) and support the close, deep and rear battle fire support requirements of Army doctrine. Additionally, AFATDS will interface with Contingency Theater Automated Planning System (CTAPS) to pass air support requests to the Air Force and Navy.

CHARACTERISTICS: AFATDS will provide integrated, automated support for planning, coordinating and controlling all fire support assets (field artillery, mortars, close air support, naval gunfire, attack helicopter, and offensive electronic warfare) and for executing counterfire, interdiction, and suppression of enemy targets for close and deep operations. AFATDS uses non-developmental, ruggedized, Common Hardware/Software used by the other ABCS Battlefield Functional Areas (BFAs). AFATDS uses the results of its target value analysis to establish target priorities and select the best weapon system from field artillery (cannons and rockets), mortars, naval gunfire, Air Force, Navy and Army attack helicopters and offensive electronic warfare. The AFATDS will receive the Air Tasking Order from CTAPS and automatically process it for use in fire support operations. It also coordinates target acquisition and sensor assets to provide targeting information and target damage assessment data. The software for AFATDS is being developed in incremental fieldable versions such that each version provides additional capability/functionality with AFATDS 00 (formerly Version 3) providing the objective system. AFATDS is designed to be fully interoperable with the other ABCS BFAs as well as with the Fire Support capabilities of the Marine Corps, Navy and Air Force. AFATDS assets will be utilized at Echelon Above Corps levels.

FOREIGN COUNTERPART: AFATDS is designed to interoperate with the fire support command and control systems of the United Kingdom (BATES), Germany (ADLER) and France (ATLAS). Norway is planning an upgrade to its ODIN Fire Support System to interoperate with the AFATDS, Bates, ADLER, and Atlas. An automated artillery tactical command and control system was previously fielded by the former Warsaw Pact, which provided digital linkage from battery to brigade or regiment level for fire planning, targeting, logistics, and terrain management calculations.

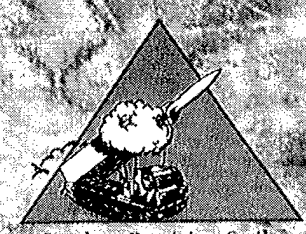
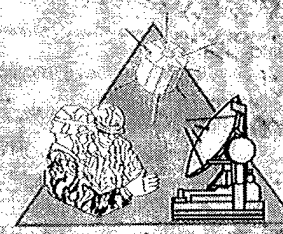
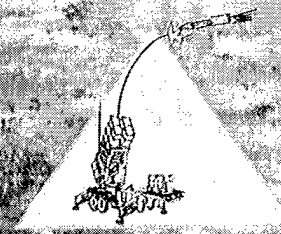
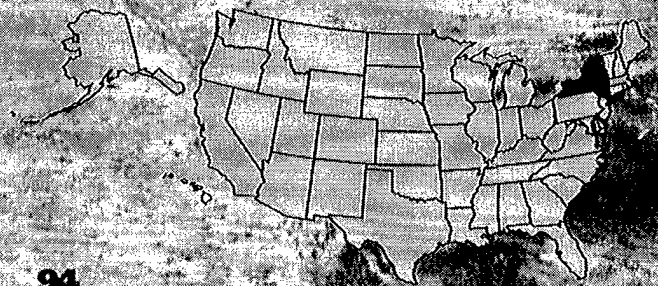
FOREIGN MILITARY SALES: Discussions are ongoing with Kuwait, Thailand, and the United Arab Emirates regarding their acquisition/purchase of AFATDS.

PROGRAM STATUS: Joint Warrior Interoperability Demonstration (JWID 96) with Air Force, Marine Corps, Navy, & NATO nations in August 1996. Began fielding AFATDS 96 in Sep 96 with First Cavalry Division as the First Unit Equipped (FUE). Conducted AFATDS 98 System Design Review, 1QFY97. Technical Test 2A of the interface to the BATES, ADLER, and ATLAS, 1QFY97.

PROJECTED ACTIVITIES: Continue development of AFATDS 97 and 98. Continue fielding of AFATDS 96 software. Conduct AFATDS 96 Initial Operational Capability. Conduct AFATDS 97 Test Readiness Review. Conduct Multi Service Operational Test.

PRIME CONTRACTOR: GTE, Taunton, MA-Hardware (CHS 2) Hughes Defense Communications, Fort Wayne, IN-Software
MILTOPE, Montgomery, AL-Hardware (CHS 1) SAIC Corp, San Diego, CA-Hardware (LCU)

*See appendix for list of subcontractors.



EMD

MISSION: The Advanced Quickfix (AQF) is a signal-intercept and precision emitter-location system that intercepts, identifies, and jams enemy C3I emitters. Leap-ahead technology exploits Communications Intelligence (COMINT) and Electronic Intelligence (ELINT) against enemy Low Probability of Intercept (LPI) and conventional signals.

CHARACTERISTICS: AQF, an intercept and emitter location system, interoperates with the Ground-Based Common Sensor-Light (GBCS-L) and Ground-Based Common Sensor-Heavy (GBCS-H) to provide Division commanders with the capability to intercept, precisely locate, and identify enemy conventional and Low Probability of Intercept (LPI) communications and noncommunications emitters and jam enemy conventional and LPI communications emitters. The AQF is an evolutionary, open architecture system which satisfies the Army's requirement to conduct tactical ground COMINT, ELINT, Electronic Support against enemy communications and radars and Electronic Attack against threat communications; and enhance the commander's ability to outmaneuver and destroy the enemy by locating or jamming threat command and control, fire control, and air defense centers. The AQF uses the EH-60L Blackhawk helicopter.

FOREIGN COUNTERPART: No known foreign counterpart.

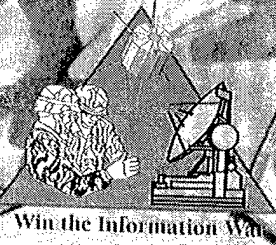
FOREIGN MILITARY SALES: No foreign military sales. Sales to Taiwan of the older technology Quickfix systems are being discussed.

PROGRAM STATUS: AQF is in Low Rate Initial Production. An integrated Customer Test with the GBCS-L, GBCS-H and AQF was conducted in 4QFY95 in support of a Nov 95 Milestone IIIA decision for AQF Low Rate Initial Production.

PROJECTED ACTIVITIES: AQF will participate in the GBCS-L IOT&E in 4QFY97.

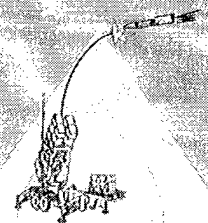
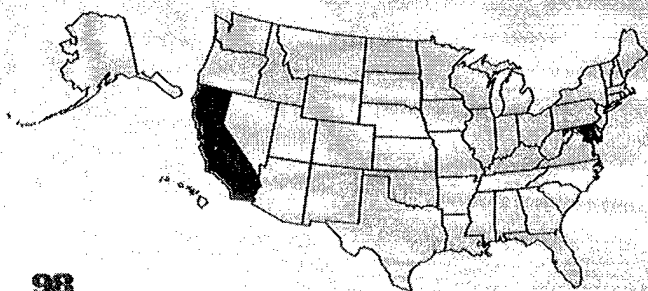
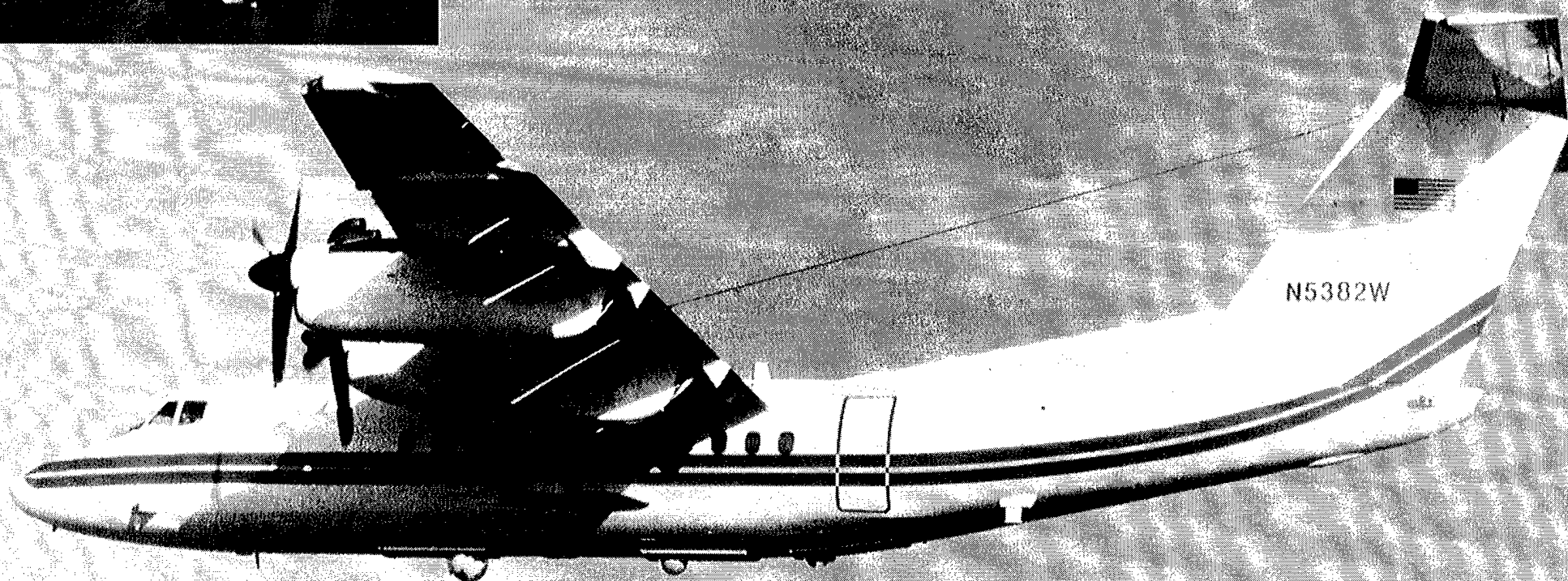
PRIME CONTRACTOR: Lockheed Martin (Owego, NY)

*See appendix for list of subcontractors.

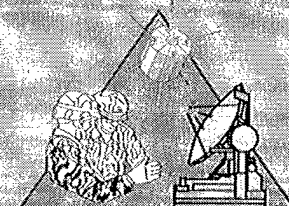


Air Defense Artillery (ADA) Brigade Tactical Operations Centers (TOCs)

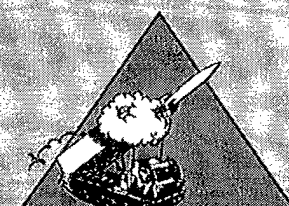
PRIME CONTRACTOR: TRW Inc. (Huntsville, AL)



Protect the Force



Win the Information War



Conduct Precision Strike

PRODUCTION AND DEPLOYMENT

Airborne Reconnaissance Low (ARL)

MISSION: The Airborne Reconnaissance Low (ARL) is a multifunction, day/night, all-weather reconnaissance intelligence asset providing low profile, rapidly deployable, intelligence collection, exploitation and reporting.

CHARACTERISTICS: The ARL is a modified DeHavilland DHC-7 (RC-7B) fixed wing aircraft with a core Signal Intelligence (SIGINT) and imagery intelligence (IMINT) mission payload controlled and operated via onboard open architecture, multifunction workstations. The SIGINT subsystem has an HF/VHF/UHF intercept and direction-finding-capable Electronic Support Measures system. The IMINT subsystem is equipped with an infrared line scanner, forward looking infrared, and daylight imaging system. The ARL system has been developed to accommodate diverse mission requirements through the implementation of an open architecture, modular, reconfigurable mission sensor. The core set of sensors has been complemented with a Moving Target Indicator/Synthetic Aperture Radar and could also include low-light level TV, multi-spectral camera, acoustic range extension system, precision targeting subsystem, and remote configuration using a direct air-to-satellite datalink. Currently, there are three interim-capable ARL systems fielded to support U.S. SOUTHCOM requirements. These fielded systems are in two different configurations; two for performing SIGINT missions (ARL-C) and one for performing IMINT missions (ARL-I). Two additional ARL systems equipped with MTI/SAR were fielded in FY96 to support U.S. PACOM requirements in Korea.

FOREIGN COUNTERPART: Numerous countries possess airborne SIGINT and/or IMINT systems, but none provide the robust multi-intelligence capability of ARL.

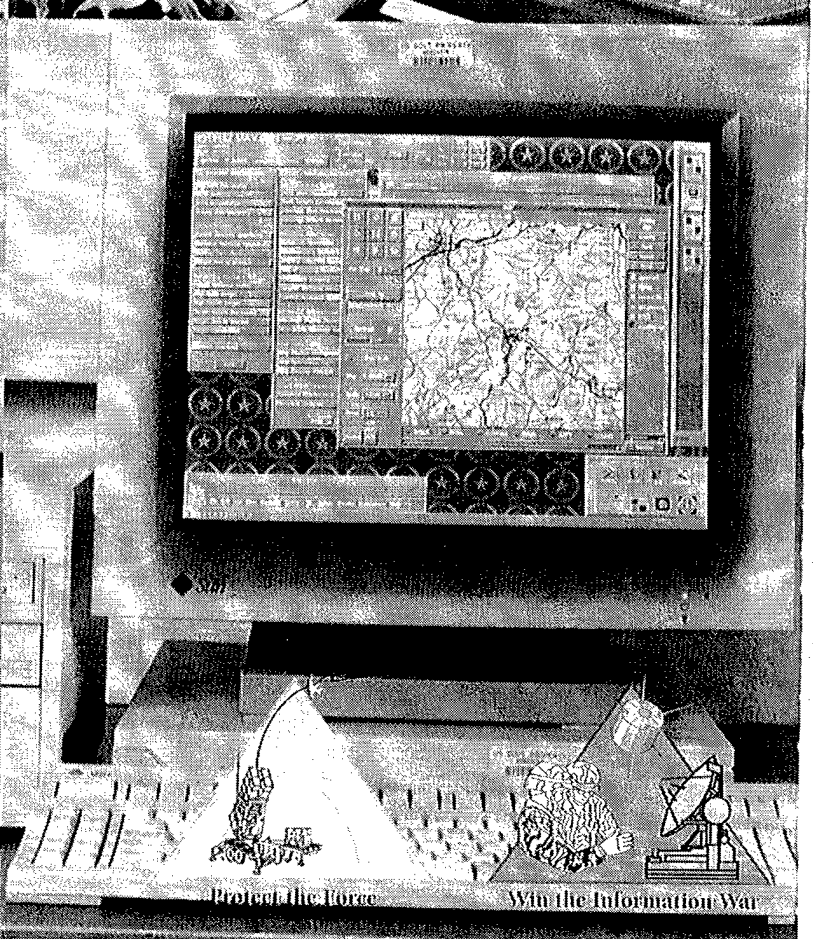
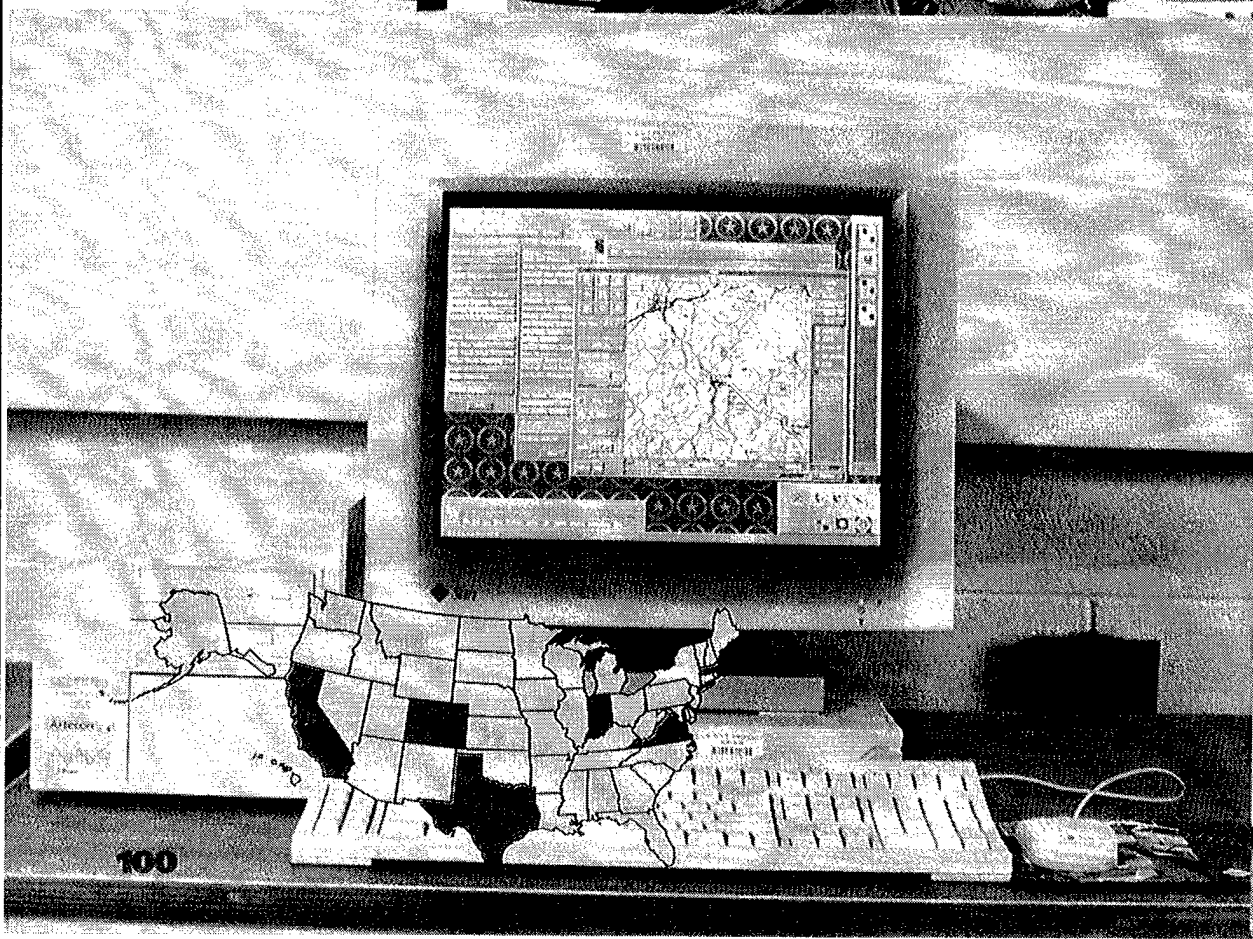
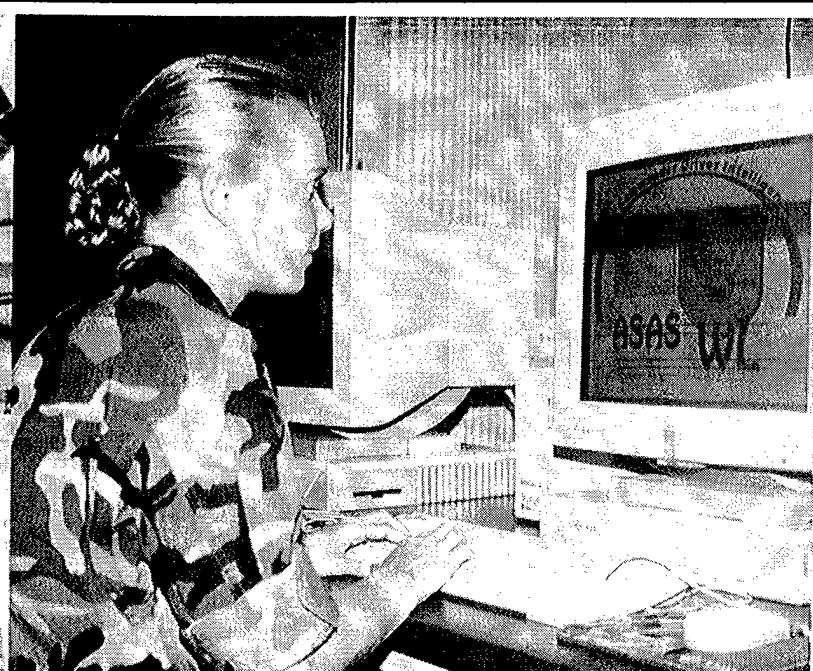
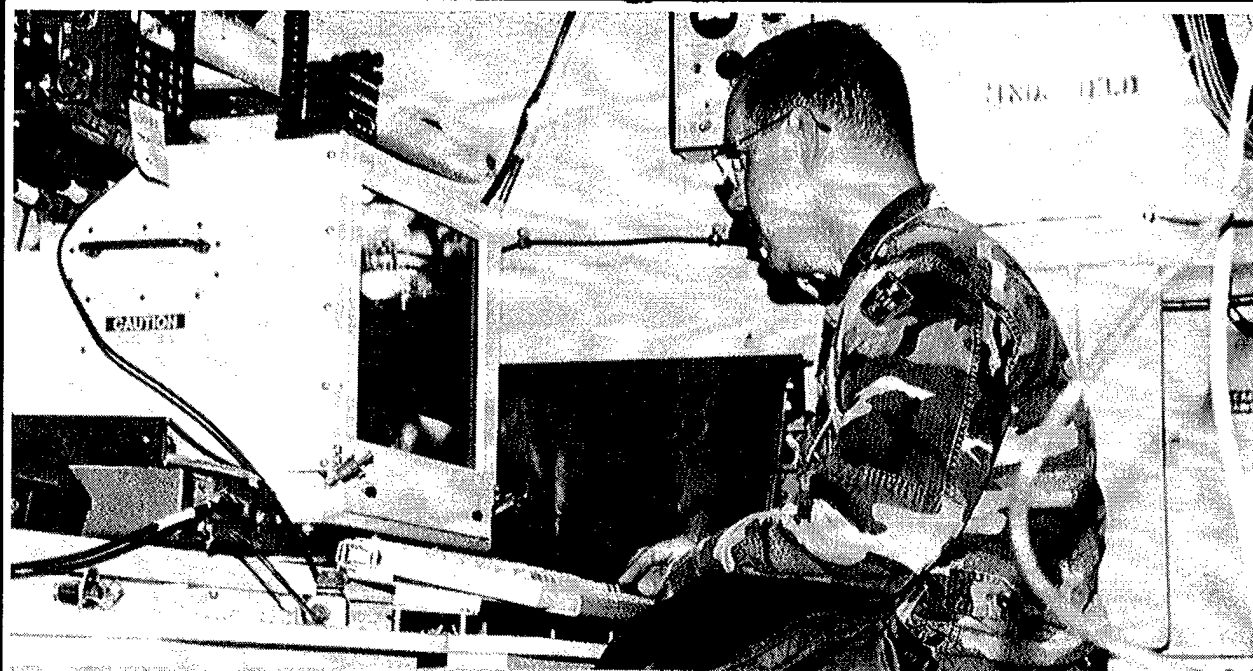
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: ARL is in MSIII Production and Deployment. ARL-M units #4 and #5 were fielded in September 1996. ARL-M unit #6 is scheduled to be fielded in September 1997. Retrofit of the ARL-I and ARL-C systems (units #1-3) is scheduled for FY97-98.

PROJECTED ACTIVITIES: Incorporate Joint Tactical Terminals (JTTs) into all six systems in FY98 to improve intelligence dissemination capabilities. Incorporate precision SIGINT targeting capabilities into all six systems in FY99. Upgrade all six systems with Joint SIGINT Avionics Family (JSAF) subsystems in FY00-02.

PRIME CONTRACTOR: California Microwave, Inc. (Belcamp, MD)

*See appendix for list of subcontractors.



EMD

All Source Analysis System (ASAS)

MISSION: The All Source Analysis System (ASAS) is the Intelligence Electronic Warfare (IEW) sub-element of the Army Battle Command System (ABCS). ASAS provides combat leaders the asset management capability and the all-source intelligence needed to visualize the battlespace and more effectively conduct the land battle.

CHARACTERISTICS: ASAS is a tactically deployable capability which receives and correlates data from strategic and tactical intelligence sensors and sources; produces ground battle situation analysis through threat integration; rapidly disseminates intelligence information; provides target nominations; helps manage organic IEW assets; and assists in providing operational security support. ASAS provides all source intelligence fusion, to give the warfighter timely and comprehensive understanding of enemy deployments, capabilities, and potential courses of action. ASAS is theater independent and operates during peacetime supporting contingency and crisis operations; stability and support operations; during low, mid and high intensity conflicts, and during restoration and return to peace time stabilization periods.

FOREIGN COUNTERPART: No known foreign counterpart.

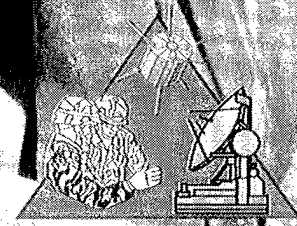
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: All Source Analysis System (ASAS) is an ACAT 1 evolutionary acquisition project with five distinct blocks. Block I, which provided initial software functionality, was fielded to 11 units and the training base during the FY93-95 timeframe. ASAS-Extended, an NDI hardware variant of fielded ASAS using the Block I software, has been fielded to the remainder of the active force and will be fielded to the Reserve Component Enhanced Brigades during FY97 through FY99. ASAS Block II, a streamlined acquisition initiative, builds upon the success of Block I, upgrading capabilities, transitioning to the Defense Information Infrastructure (DII) Common Operating Environment (COE) and moves to an open architecture capable of running on common hardware. ASAS Block III will be principally a software enhancement and communications upgrade that provides the Army with the objective ASAS capability. The ASAS Block III development begins in FY99. Blocks IV and V will be developed under PDSS.

PROJECTED ACTIVITIES: Continue fielding ASAS - Extended to Reserve Components.
Continue ASAS Block II Engineering and Manufacturing Development (EMD) effort.
Provide Block II Capability Package-Remote Workstation (RWS) to Task Force XXI.
Complete testing of Block II Capability Package-Single Source upgrade.
Procure and field CHS-2 hardware as part of Block II Capability Package upgrades.
Provide units with sustainment training assistance.
Participate in JWID 97 and Task Force XXI.

PRIME CONTRACTOR: ASAS Block II: Lockheed Martin (Littleton, CO)

* See appendix for list of subcontractors.



MISSION: The Army Data Distribution System (ADDS) functions to provide a tactical data distribution radio system in support of the needs of the multitude of computers being fielded as part of the Army Tactical Command and Control System (ATCCS), which is transitioning to the Army Battle Command System (ABCS), and other battlefield automated systems to include those requirements associated with Force XXI programs.

CHARACTERISTICS: The ADDS consists of three major products: the Enhanced Position Location Reporting System (EPLRS) for medium-speed data distribution, the Joint Tactical Information Distribution System (JTIDS) for high-speed data distribution, and the Near-Term Digital Radio (NTDR) which is planned to replace EPLRS. The NTDR is a Non-Developmental Item R&D program that will meet Army data communication needs at Brigade and below. The program will create the Army communications data backbone from platoon to brigade for Task Force XXI. The ADDS uses Time Division Multiple Access communications architecture to avoid transmission contention. Frequency hopping, error detection and correction with interleaving, and spread spectrum technology provide jamming resistance. The EPLRS portion of ADDS provides data distribution and position/navigation services in near real time. EPLRS consists of a Network Control Station (NCS) and EPLRS User Units (EPUUs). Up to 460 EPUUs can be controlled by a single NCS. The EPUU is a radio that can be configured as a Manpack Unit, a Surface Vehicle Unit, and an Airborne Vehicle Unit. The JTIDS portion of the ADDS program is a joint program representing all services and allied force requirements with the purpose of acquiring a digital information system for tactical interoperability and awareness which complies with the ASD (C3I) policy establishing Link-16 as the DOD primary tactical data link for C2I. The primary use of the Class 2M terminals is to distribute air tracks to net Air Defense Control Centers, and to control air and missile defense weapon engagement operations. The Class 2M will be integrated into six Army platforms. The NTDR program will have an open system architecture and have five times the data throughput of EPLRS, and support both tactical Internet protocol (IP) host systems such as Applique as well as Battlefield Functional Area host systems.

FOREIGN COUNTERPART: EPLRS has no known foreign counterpart. JTIDS is a joint and multinational system that will be interoperable with NATO units.

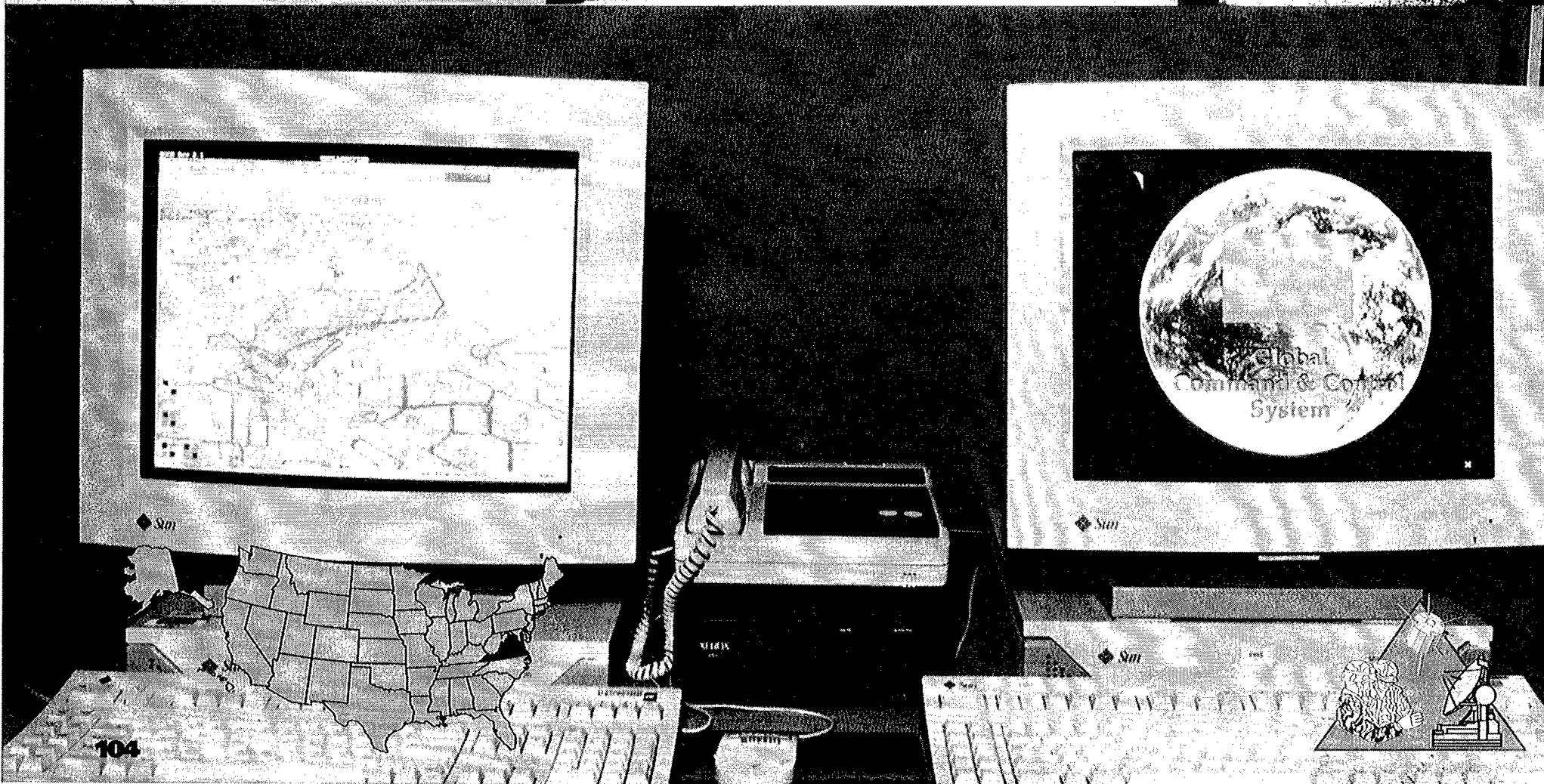
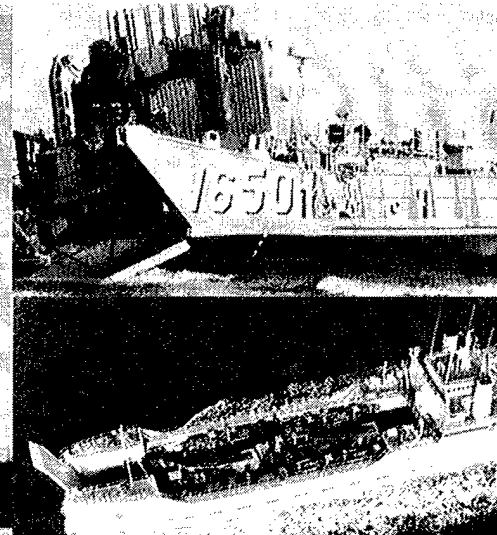
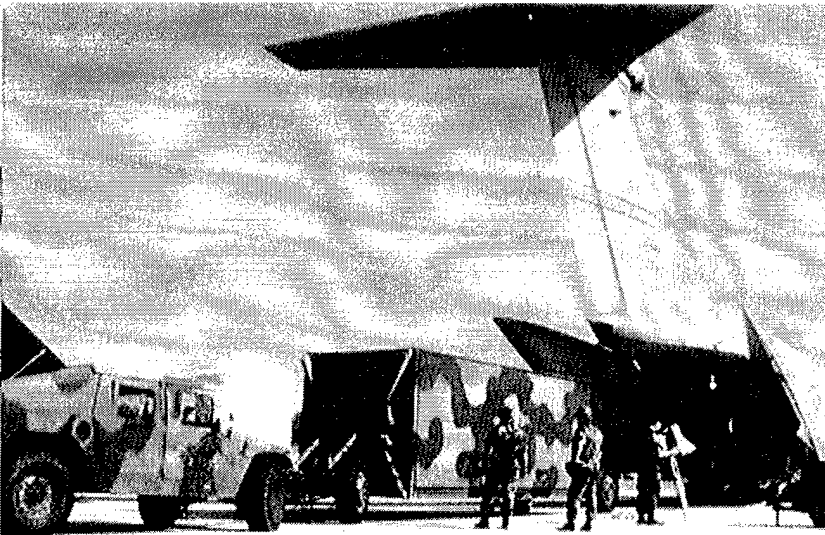
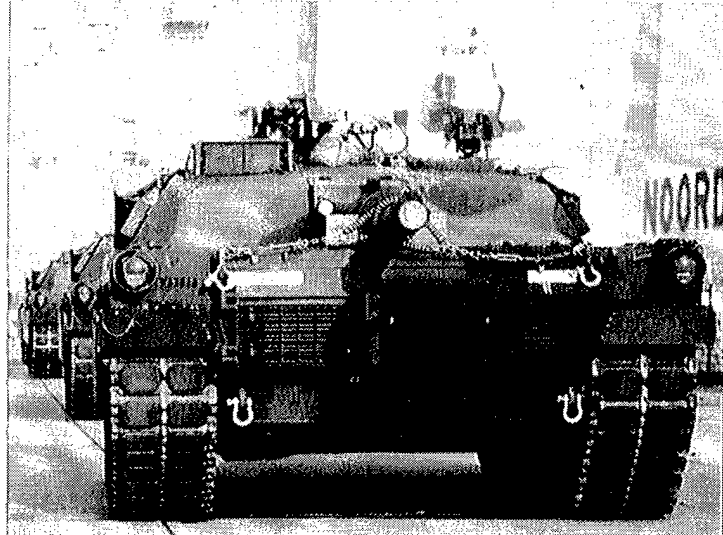
FOREIGN MILITARY SALES: JTIDS (2M) is currently being acquired by France and the Netherlands.

PROGRAM STATUS: A total of 1816 EPLRS were built during Low-Rate Initial Production (LRIP). The LRIP IOTE was completed in August 1994. Fielding commenced in January 1995. The JTIDS has completed engineering development and system technical testing for the Class 2M Terminal. The Development Tests on the Class 2M Terminals are being conducted from April through September 1996. Operational Test/Multi-Service Tests will be conducted from October through November 1997. JTIDS LRIP was awarded 26 March 1996. NTDR basic contract was awarded competitively on 19 Jan 96 for 200 NTDRs with an option for up to 950 units. Technology insertion efforts began in FY97.

PROJECTED ACTIVITIES: JTIDS Full Rate Production Decision is scheduled for March 1997. EPLRS Very High Speed Integrated (VHSIC) developed under EPLRS LRIP are scheduled for retrofit starting 2QFY98. VHSIC and on-going Engineering Change Proposal (ECP)/System Improvement Program (SIP) efforts will provide EPLRS with a three-fold increase in data rate. Full Rate Production Decision is scheduled for 2QFY97. NTDR Operational Assessment is scheduled for 3QFY98. Initial Production Award is anticipated 3QFY99.

PRIME CONTRACTOR: General Motors (Hughes Aircraft Company) (HAC) (El Segundo, CA and Forest, MS) HAC/Magnavox (Ft Wayne, IN) EPLRS, GEC Marconi (Totowa, NJ) JTIDS, ITT (Ft Wayne, IN) NTDR

* See appendix for list of subcontractors.



MISSION: As the Echelon Above Corps segment of the Army Battle Command System (ABCS), the Army Global Command and Control System (AGCCS) will provide functional applications and decision support software for Commanders and Staffs at Strategic Command Centers, Theater Army Headquarters, and Major Subordinate Commands.

CHARACTERISTICS: The AGCCS is the Army implementation of the Joint Staff sponsored Global Command and Control System (GCCS). The AGCCS will be interoperable with the GCCS and the tactical implementations of the ABCS such as the Army Tactical Command and Control System to provide significant improvement in information exchanges between all levels of joint and service operations.

The AGCCS is developed by reusing the "best of breed" functional C2 software currently resident in other Army systems, such as the Army WWMCCS Information System (AWIS) and the Standard Theater Army Command and Control System. Application code from these systems is integrated into the GCCS Common Operating Environment (COE). The COE incorporates standardized rigidly controlled non-developmental software modules as promoted by all military components and provides a full range of systems services for database functions, network operations, message handling, mapping, security controls and more. The system's hardware platform is based on the Common Hardware Software II (CHS II) contract. The system architecture links users via Local Area Networks (LANs) in Client/Server configurations with interface to the Secret Internet Protocol Router Network (SIPRNET) for worldwide communication.

FOREIGN COUNTERPART: No known foreign counterpart.

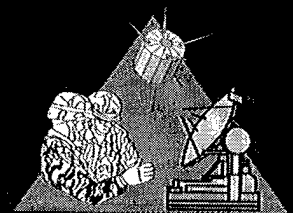
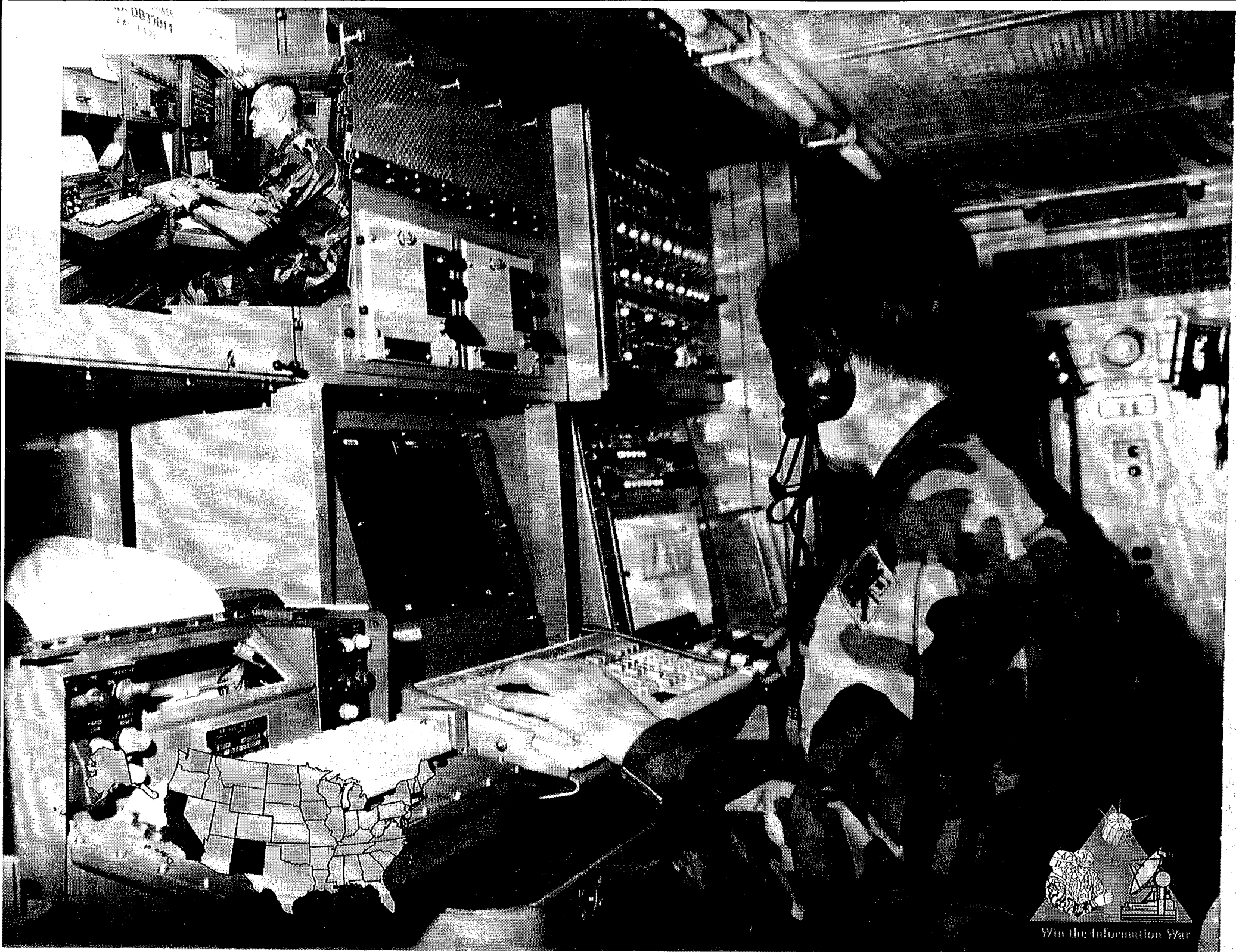
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: Award of the AGCCS systems integration and development contract, December 1994. The Initial Operating Capability (IOC) occurred in August 1996. Currently validating requirements for continuing C2 functional enhancement.

PROJECTED ACTIVITIES: Fielding of functional capabilities began in January 1996 and will continue in FY97.

PRIME CONTRACTOR: Lockheed Martin (Springfield, VA)

*See appendix for list of subcontractors.



Win the Information War

MISSION: The mission of Circuit Switch and Message Switch is to provide automatic switching service - interconnecting analog and digital users - between tactical and Defense Communication System switches and between U.S. and NATO national switches.

CHARACTERISTICS: The AN/TTC-39A/D system is the heart of the multichannel switched network and is a highly efficient means of connecting telephones, message traffic, and data users in both secure and nonsecure modes in the area network at Echelons Above Corps (EAC). The AN/TTC-39 system provides corps and theater echelons with tactical, automatic store, and forward-record traffic capability. The EAC extension system is based on Mobile Subscriber Equipment (MSE) identical switches: the AN/TTC-46 (LEN) and AN/TTC-48 (SEN). The AN/TTC-39 circuit switch family consists of three fielded versions. The "A" model switches are an S-280, 744-line analog/digital switch with integral COMSEC and a downsized, modified S-250, 324-line analog/digital switch. Both provide up to 7,500 calls-per-hour service, 5-level precedence, conference, and many other subscriber features. The "D" model is an S-280, 708-line analog/digital switch that incorporates the same affiliation and flood search routing as provided in MSE. A packet switch (PS) overlay provides a data transfer capability identical to that in MSE. Most "A" features are still available in the "D" model. The AN/TTC-39 message switch family consists of two fielded versions. All are in S-280 shelters. There are a dual-shelter, 50-line switch and single-shelter, 48-line switches. All are tactical, automatic store, and forward switches that provide service for both strategic (R) and intelligence (Y) communities. The switches provide interface with inventory, TRI-TAC, and Automatic Digital Network equipment with precedence, security, and other subscriber features. The Fly-Away Message Switch System (FMSS) is a portable 8-line Message Switch.

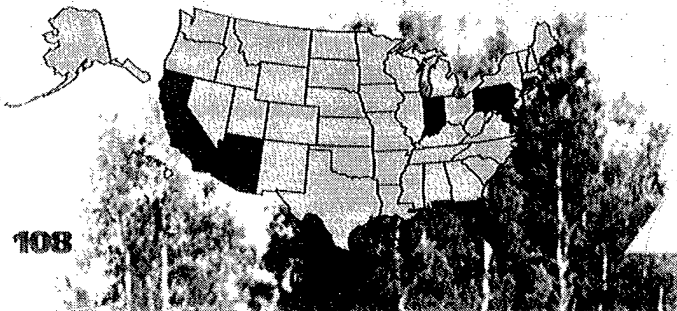
FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

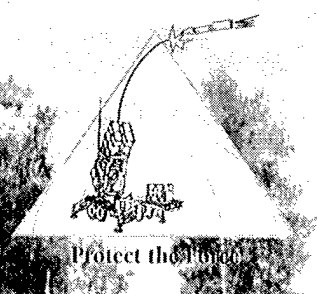
PROGRAM STATUS: The circuit and message switches are currently deployed and were initially authorized for production in FY80. Both switches are currently in product improvement phases. The circuit switch "A" model has been fully fielded to the Army, Air Force, and Joint communities. The "D" model with PS will complete fielding in FY96. A Circuit Switch Routing Improvement Program (CSRTEP) has been completed and tested and will provide for a common software baseline in most TTC-39 A/39D and MSE switches. Fielding of this upgrade is on-going. The fielding of the AN/TTC-39A is also ongoing. An award for the Fly-Away Message Switch occurred in March 1996.

PROJECTED ACTIVITIES: Approve ECP which will begin a Single Shelter Switch Program.
Continue Fielding of Routing Improvement Program (CSRTEP) to all Area Common User System (ACUS) switch users (except AN/TTC-39-A(V)1).
Incorporate Enhanced Switch Operation Program into ACUS switches.
Incorporate video and Asynchronous Transfer Mode capabilities into ACUS switches.
Transition AN/TTC-39A and AN/TTC-39 to CECOM.
Procure and Field Network Encryption System.

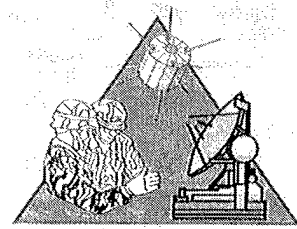
PRIME CONTRACTOR: California Microwave (Woodland Hills, CA) FMSS
GTE (Taunton, MA) except FMSS



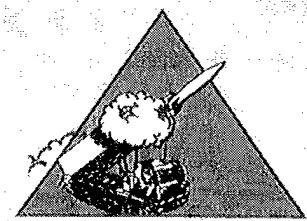
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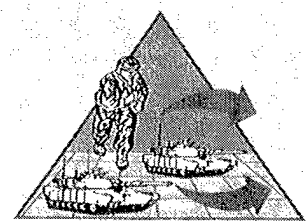
Protect the Homeland



Win the Information War



Conduct Precision Strike



Dominate the Maneuver Battle

MISSION: The Comanche will perform the armed reconnaissance mission for attack helicopter and air cavalry units.

CHARACTERISTICS: The Comanche (RAH-66) is the Army's next generation helicopter designed to perform the armed and light attack reconnaissance mission. The Comanche will significantly expand the Army's capability to conduct reconnaissance operations in all battlefield environments, adverse weather, and during the day or night. The Comanche will "protect the force" with its advanced electro-optical sensors, aided target recognition and sensor/weapons integration. Comanche's digital communications capacity will enhance the Army's capability to win the "battlefield information war" and allow interface with Joint Surveillance and Target Attack Radar System (JSTARS) and other joint sensors and weapons platforms. Comanche's design for rapid rearm, refuel and repair will provide increased operation tempo. Low observability, target recognition and digitized communications provide the capability to conduct deep "precision strike" missions against time sensitive targets. The Comanche will replace three types of helicopters (AH-1, OH-58, and OH-6) that currently perform the armed reconnaissance mission.

Crew: 2 pilots (single-pilot operable)

Speed: 175 kt (Dash)

Endurance: 2.5 hr (plus 20-minute reserve)

Armaments: 20 mm Turreted Gatling Gun, Air-to-ground and air-to-air missiles

Mission Equipment Package: Advanced electro-optical target acquisition and designation system, aided target recognition and helmet-mounted display. Each aircraft will have Longbow Millimeter Wave Radar capability and provisions for additional weapon stores.

FOREIGN COUNTERPART: French/German: Tigre

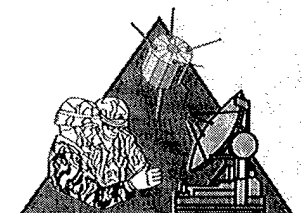
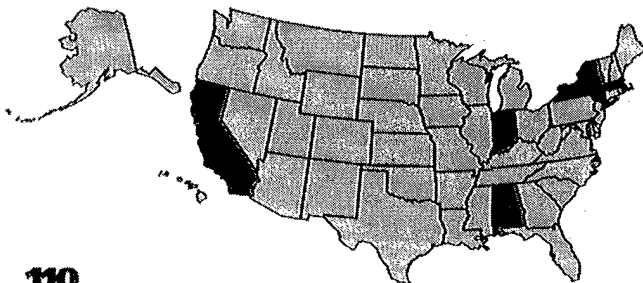
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The program is currently in the development phase of the acquisition life-cycle, with two prototype aircraft being built and flight tested. The program also includes six Early Operational Capability (EOC) aircraft that will be evaluated in a field environment prior to initiation of low-rate initial production (LRIP). The first flight of prototype 1 occurred on 4 January, 1996.

PROJECTED ACTIVITIES: DAB MSII October 2001.
IOC July 2006.

PRIME CONTRACTOR: Allied Signal/Rolls-Royce (Allison Engines) Team (Indianapolis, IN)
Boeing and Sikorsky Team (Stratford, CT)

* See appendix for list of subcontractors.



PRODUCTION AND DEPLOYMENT

MISSION: The Common Hardware/Software (CHS) program equips the Army Battle Command Systems from Echelons Above Corps to foxhole with common computer hardware/software.

CHARACTERISTICS: CHS improves interoperability and lowers life-cycle costs by standardizing battlefield command and control (C2) automation through centralized buys of Non-Developmental Items, standardized protocols, and the development of reusable common software (CS). The program provides CHS to over 80 Army and DoD customers; three primary contracts are available with the following hardware—the CHS-1 Transportable Computer Unit (TCU)/Handheld Terminal Unit (HTU), CHS-2 High Capacity Computer Unit (HCU)/TCU/HTU, and the Lightweight Computer Unit (LCU). These contracts have commercial, rugged and highly rugged hardware versions and provide for commercial industry based logistics support that meets the unique requirements of the tactical military units.

	CHS-1 (TCU)	CHS-2 (HTU)	CHS-2 (HCU(2))	LCU
Processor:	RISC	80486DX2	RISC	Pentium
MHz clock:	125	50	50,61,75	90
MIPS:	147	>10	123,164,205	14/20
RAM:	80-400 MB	16 or 32 MB	32-512 MB	8-32/8-128 MB
CHS/LCU software:	UNIX-POSIX; RDBMS; GKS, PHIGS, PEX; DoD Protocols; GOSIP; E-MAIL; NIX, NFX, DCE; MPN/DDN X.25; ADA; DOS; PURGING SW; CASE TOOLS			

A key component to the overall CHS program is CS. The CS program builds upon Army, Navy and Air Force software to produce common standard products for the Defense Information Infrastructure Common Operating Environment (DII COE) for use by all DoD services and agencies. The CS program provides Army products and input to the DII COE developments being managed by other DoD organizations and is also responsible for developing common C2 Army applications for use by many systems. These CS activities have resulted in improved interoperability, reduced development and maintenance costs and shortened development schedules through a robust systematic software reuse program.

FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

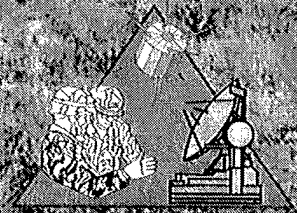
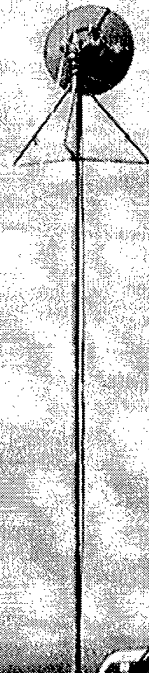
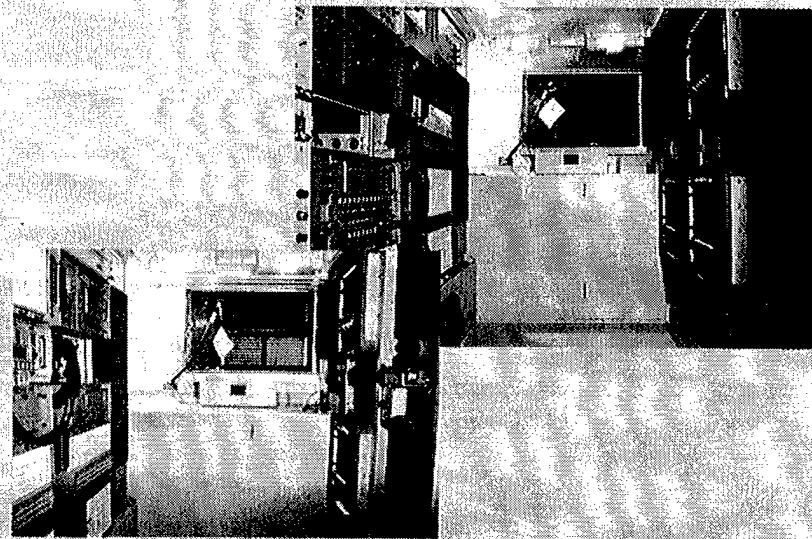
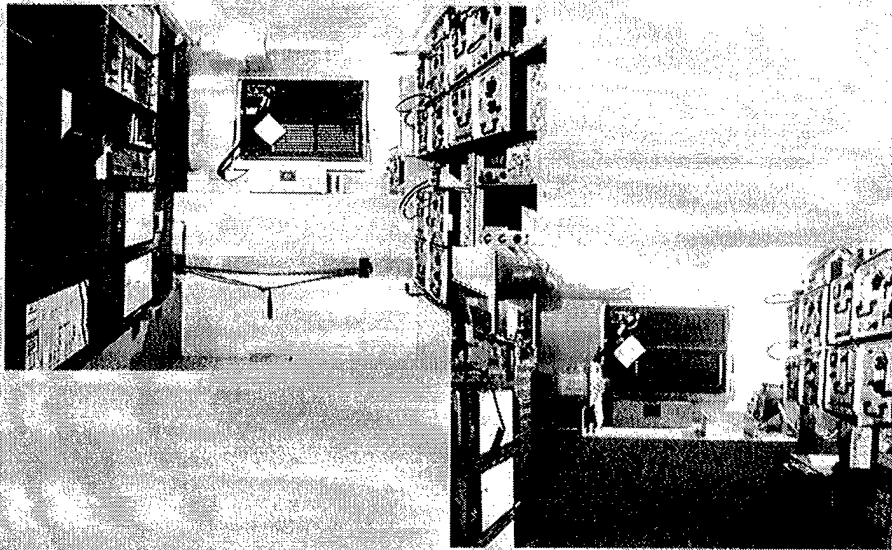
PROGRAM STATUS: The CHS-1 contract was extended to August 1997. CHS-2, which is a follow-on to the CHS-1 contract, was awarded to GTE April 10, 1995. CH-2 ruggedized HCU and TCU equipment began delivery February 1996, and First Article Testing was completed in Oct 1996.

PROJECTED ACTIVITIES:

- Complete the CHS-2 HTU First Article and Reliability Qualification Test.
- Continue execution of common HW/SW upgrades.
- Continue Technology Insertion.
- Development of DII COE products for DoD systems.
- Development of common Army C2 applications.

PRIME CONTRACTOR:

CHS-1: MILTOPE Inc. (Hope Hull, AL)
 CHS-2: GTE (Taunton, MA)
 LCU: SAIC (San Diego, CA)



www.informationwar.com

MISSION: Digital Transmission Assemblages represent a family of high-capacity, digital radio systems that link circuit and message switches into communications networks supporting telephone and message traffic at the theater-tactical level. They also provide the transmission path for linking extension switches at subscriber locations into the main switching network.

CHARACTERISTICS: The Digital Transmission Assemblages provide a series of radio relay and radio terminal equipment in a variety of sizes, capabilities, and characteristics. The following provides a listing of the available systems.

AN/TRACE-173	(fullsize)	Radio Terminal Set:	Single Shelter (S-280C)
AN/TRC-173A	(downsize)	Radio Terminal Set:	Single Shelter (S-749)*
AN/TRC-173B	(HMDA)	Radio Terminal Set:	Single Shelter (S-805G)
AN/TRACE-174	(fullsize)	Radio Repeater Set:	Single Shelter (S-280C)
AN/TRC-174A	(downsize)	Radio Repeater Set:	Single Shelter (S-749)*
AN/TRC-174B	(HMDA)	Radio Repeater Set:	Single Shelter (S-805G)
AN/TRC-175	(fullsize)	Radio Terminal Set:	Single Shelter (S-280C)
AN/TRC-175A	(downsize)	Radio Terminal Set:	Single Shelter (S-749)*
AN/TRC-175B	(HMDA)	Radio Terminal Set:	Single Shelter (S-805G)
AN/TRC-138A	(fullsize)	Radio Repeater Set:	Single Shelter (S-280C)
AN/TRC-138B	(downsize)	Radio Repeater Set:	Single Shelter (S-749)*
AN/TRC-138C	(HMDA)	Radio Repeater Set:	Single Shelter (S-805G)

*S-749 is essentially an S-280C shelter reduced in length from 12 ft to 7 ft

FOREIGN COUNTERPART: No known foreign counterpart.

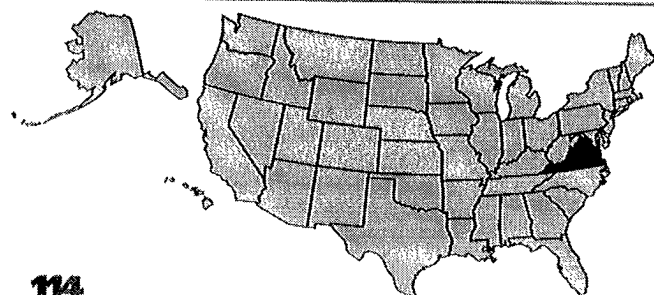
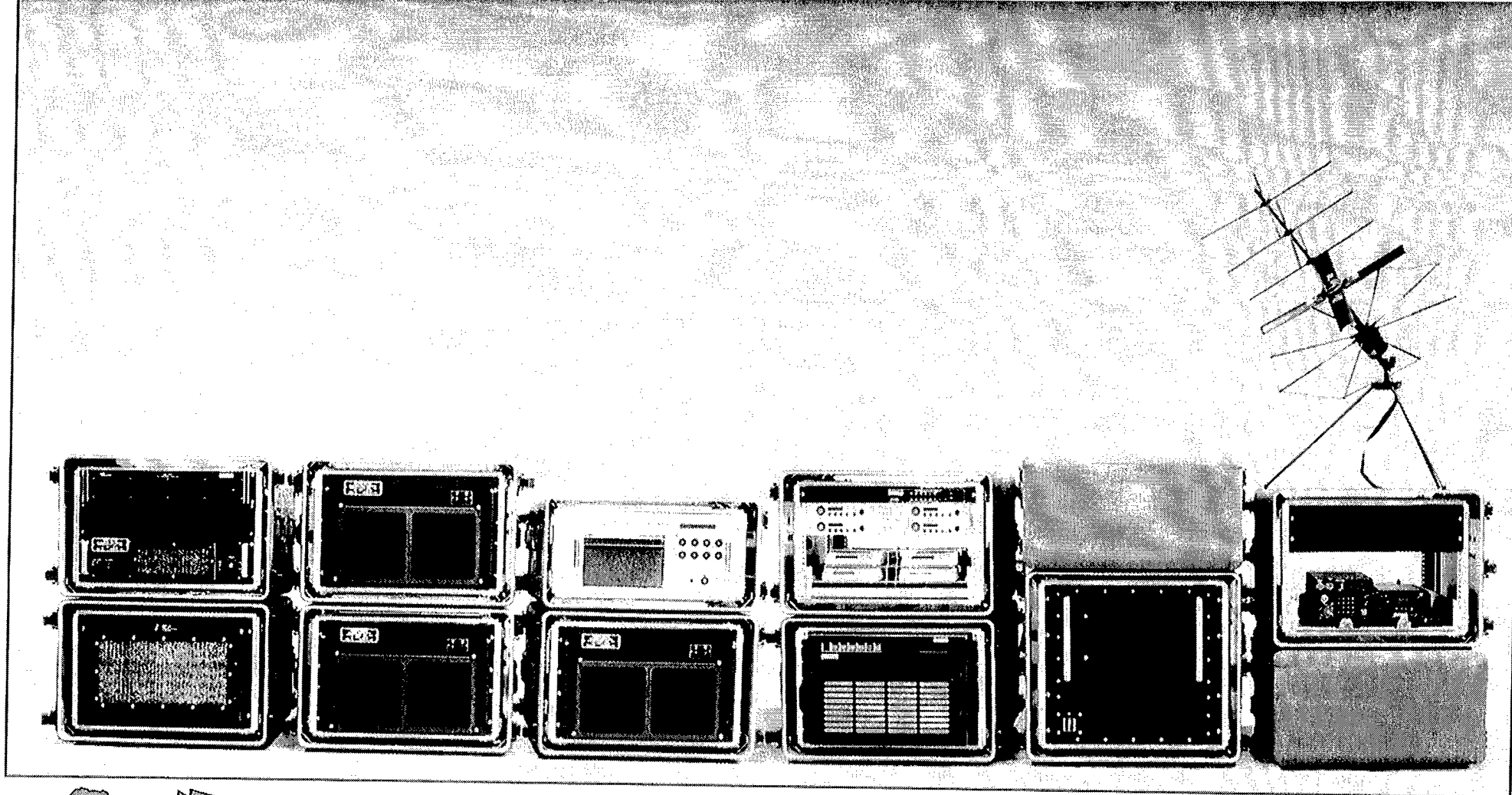
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: A new generation of assemblages is currently being produced by Laguna Industries. These are known as the High Mobility DGM Assemblage (HMDA) and are transported on two heavy HMMWVs. One vehicle transports the shelter while the second vehicle transports the AB-1373/TRC antenna masts. These systems will replace the active Army assemblages in EAC Signal units in FY98 and FY99. The First Article Test was completed and an Option Year I was awarded during 2QFY95. Production deliveries began 1QFY96.

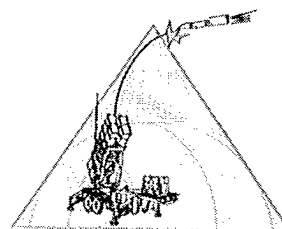
PROJECTED ACTIVITIES: HMDA retrofits begin in 1QFY98.

PRIME CONTRACTOR: Laguna Industries (Laguna Pueblo, NM)

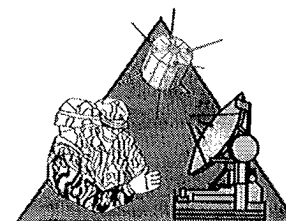
* See appendix for list of subcontractors.



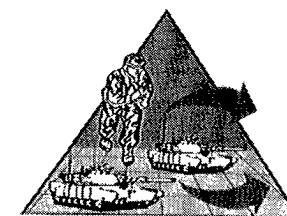
114



Protect the Force



Win the Information War



Dominate the Maneuver Battle

PRODUCTION AND DEPLOYMENT

Enhanced Trackwolf (ET)

MISSION: The Enhanced Trackwolf (ET) system is an Echelon Above Corps, ground-based, man-transportable, transit cased, high frequency direction finding and intercept system.

CHARACTERISTICS: The Enhanced Trackwolf is an evolutionary step from the Trackwolf Program, with greater transportability, capability, and operational flexibility. The program was directed by Congress in FY93 as a result of DESERT SHIELD/DESERT STORM, during which the current Trackwolf system proved too large and cumbersome for rapid deployment. In addition to transportability advantages from the current Trackwolf system, ET will incorporate advanced capabilities that will allow intercept of modern modulations. The system consists of three stations, each with nine positions, each configured as 1 DF, 2 Management/Analysis, and 6 Collection functions. Set-up/tear-down times are less than four hours and each suite uses less than 4000 watts of power. The architecture is designed to be an integration of proven technologies, with extensive use of non-developmental hardware and software.

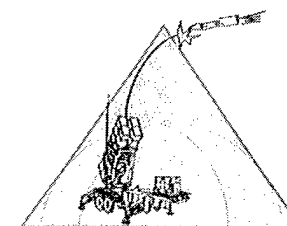
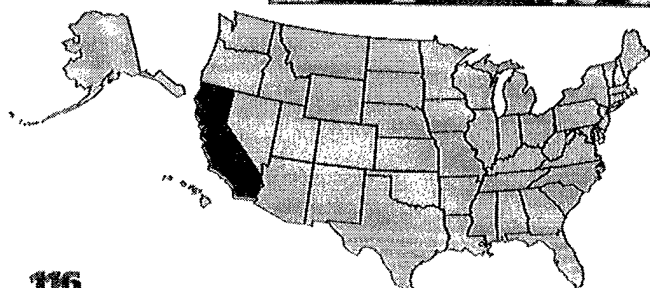
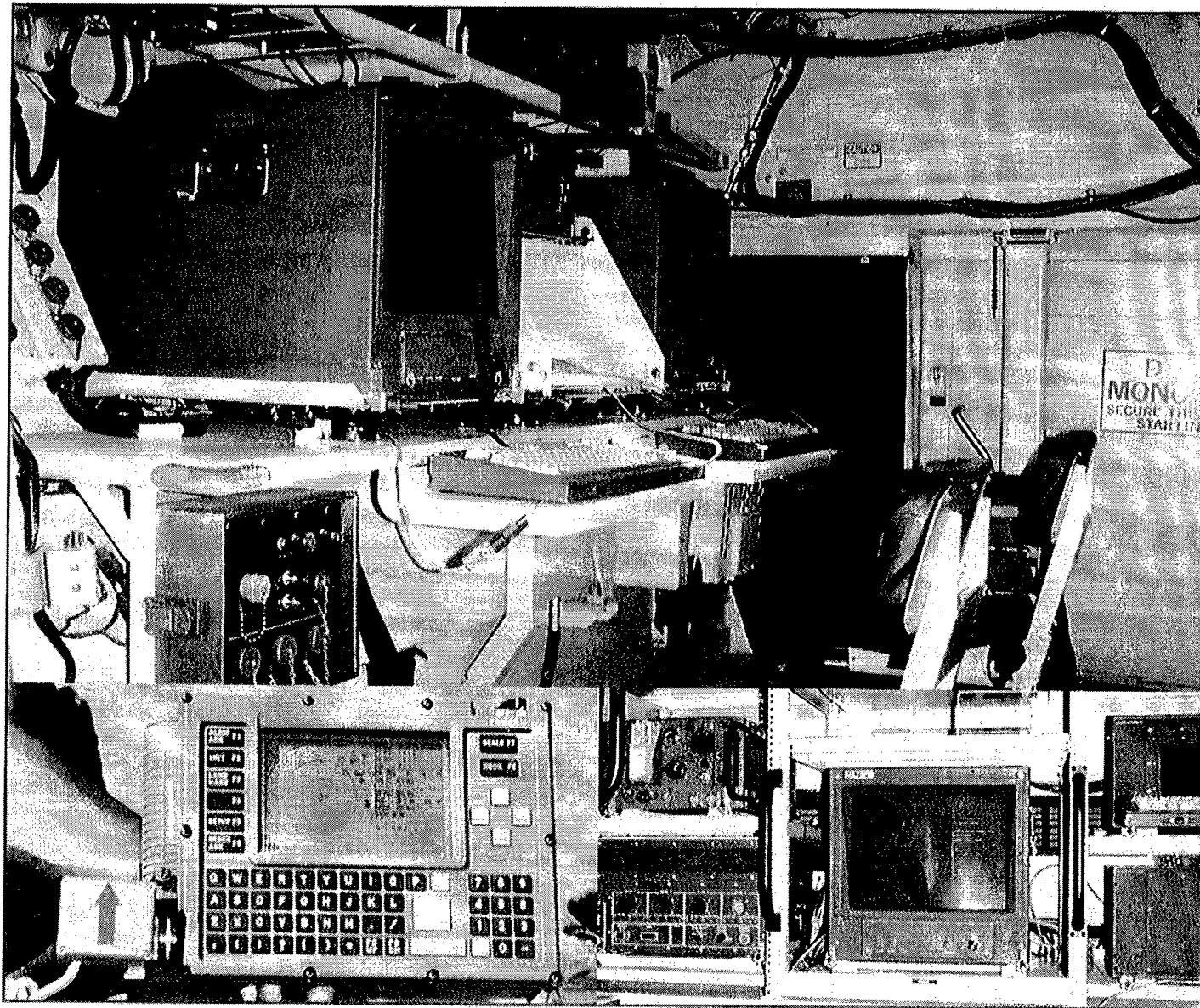
FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

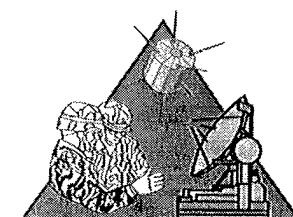
PROGRAM STATUS: A competitive solicitation resulted in an award for the ET effort on 31 March 1994. Critical Design Review conducted 2QFY95. Software and hardware testing completed 4QFY95.

PROJECTED ACTIVITIES: Completing fielding process to 201st MI Battalion 2QFY97. Completing new equipment training and working Block 1 upgrade 2QFY97. Fielding to 66th MI Battalion in 4QFY97.

PRIME CONTRACTOR: Engineering Research Associates (Vienna, VA)

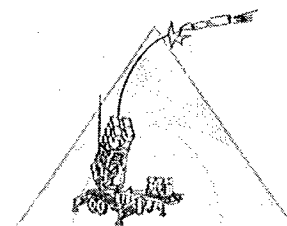
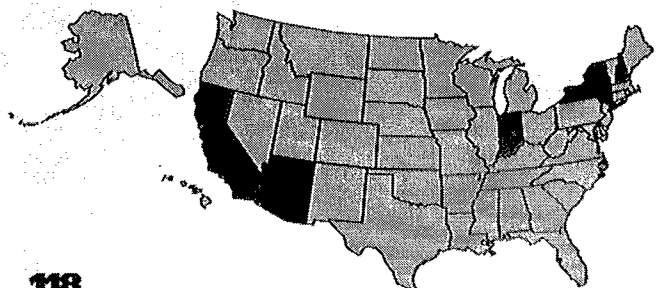
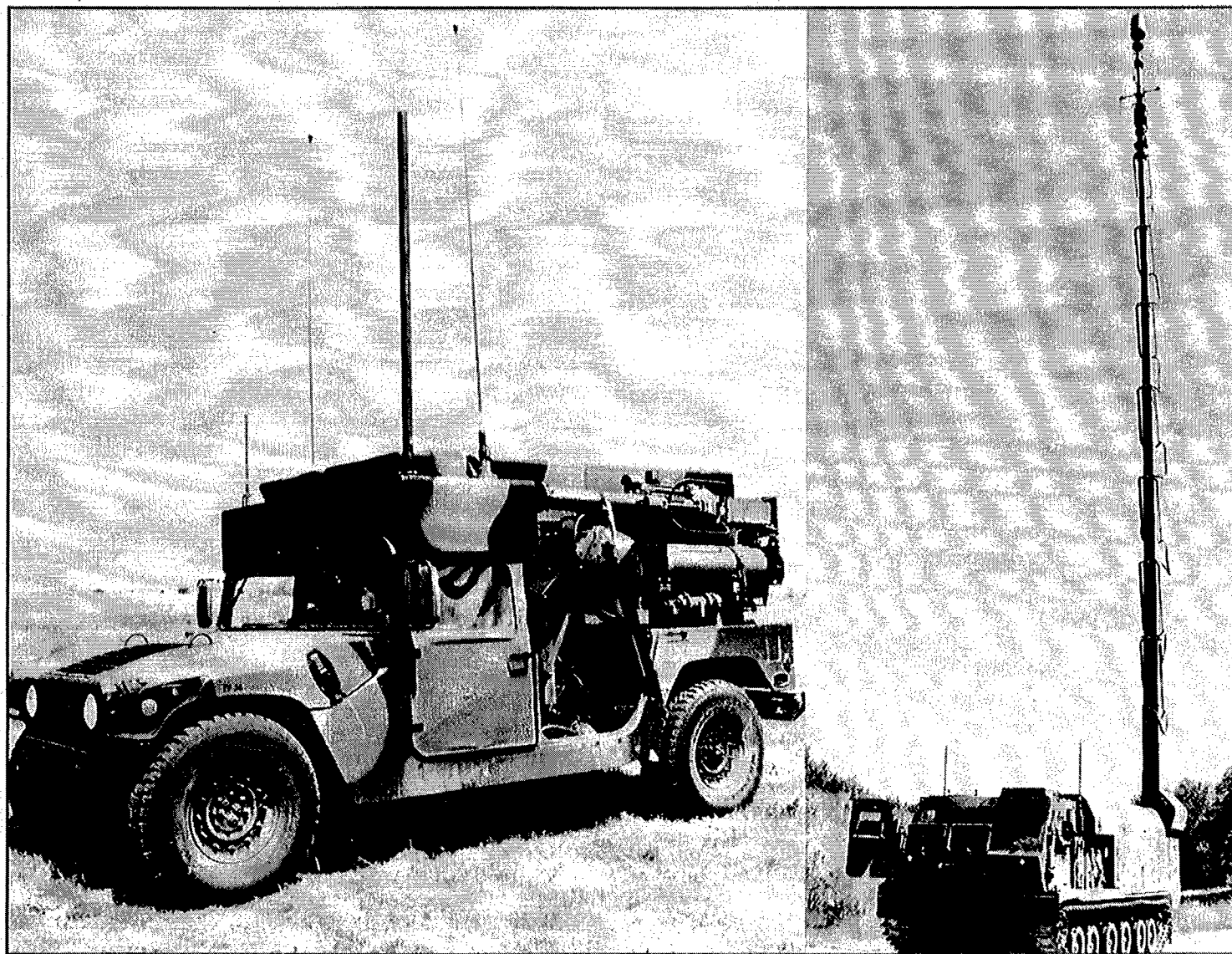


Protect the Force

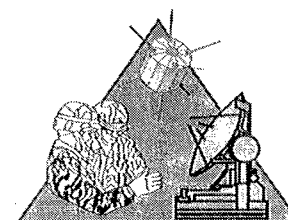


Win the Information War

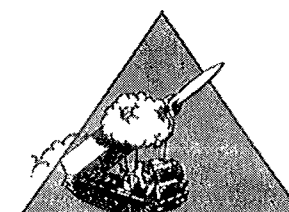
PRIME CONTRACTOR: TRW (Redondo Beach, CA)



Protect the Force



Win the Information War



Conduct Precision Strike

MISSION: The Ground Based Common Sensor-Light (GBCS-L) and the Ground Based Common Sensor-Heavy (GBCS-H) are vehicle mounted signals-intercept and precision emitter-location systems that intercept and identify enemy C3I emitters and radars and provide electronic countermeasures against enemy communications.

CHARACTERISTICS: GBCS, an intercept and precision emitter location system, provides Division commanders with the capability to intercept, precisely locate, and identify enemy conventional and Low Probability of Intercept (LPI) communications and noncommunications emitters and jam enemy conventional and LPI communications emitters. GBCS is an evolutionary, open architecture system which satisfies the Army's requirement to conduct tactical ground Communications Intelligence, Electronic Intelligence, Electronic Support against enemy communications and noncommunications emitters and Electronic Attack against threat communications; and enhances the commander's ability to outmaneuver and destroy the enemy by locating or jamming threat command and control, fire control, and air defense centers. The GBCS will be used in two platform configurations that can perform on all terrain. The GBCS-L will be deployed on a Highly Mobile Multipurpose Wheeled Vehicle (HMMWV) in support of Light Divisions. The GBCS-L can be transported by a C-130 or C-141. The GBCS-H will be deployed on a tracked vehicle (Bradley variant) in support of Armored and Mechanized Infantry Divisions. The GBCS-H can be transported by a C-17 and C-5.

FOREIGN COUNTERPART: No known foreign counterpart.

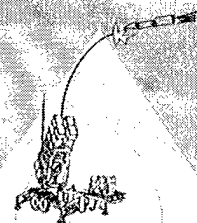
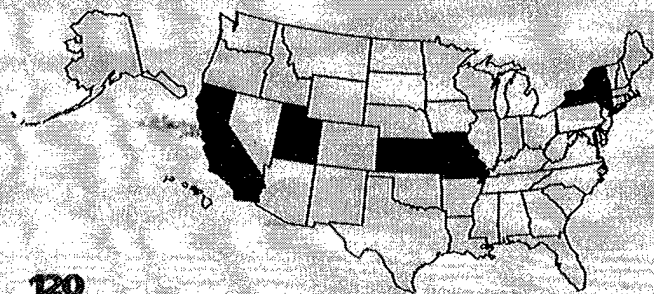
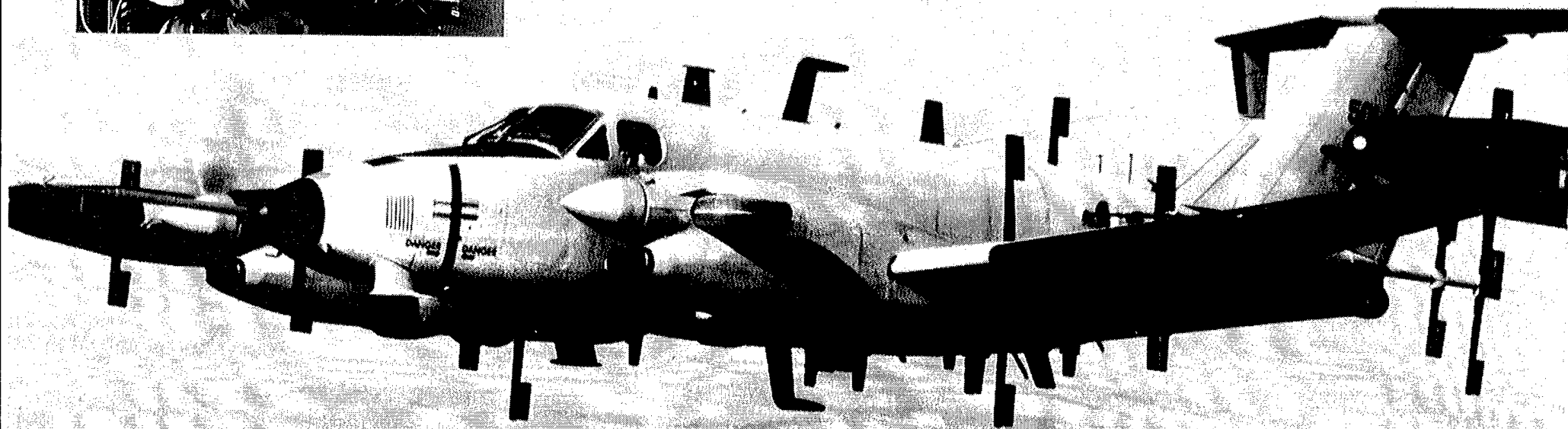
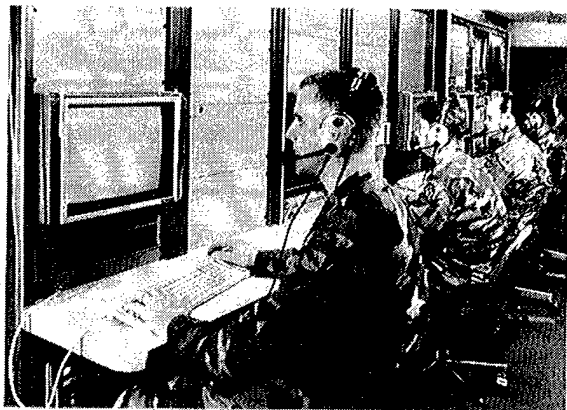
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: Both light and heavy variants are in the Engineering and Manufacturing Development phase. A Customer Test for GBCS-L was conducted 3QFY94 and a Special In-Process Review for the GBCS-L occurred in 4QFY94 to support a Limited Procurement production decision.

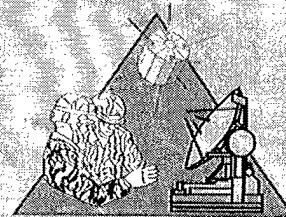
PROJECTED ACTIVITIES: GBCS-L IOT&E will be conducted in 4QFY97.

PRIME CONTRACTOR: Lockheed Martin (Owego, NY)

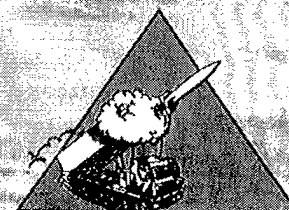
* See appendix for list of subcontractors.



Protect the Force



Win the Information War



Conduct Precision Strike

PRODUCTION AND DEPLOYMENT

Guardrail/Common Sensor (GR/CS)

MISSION: The Guardrail/Common Sensor's (GR/CS) mission is to provide a fixed-wing communication and electronic emitter intercept and direction-finding system with precision geolocation. GR/CS operations support Corps, Division, and Joint Land Force Component Commanders in precision strike operations, winning the information war, and digitization of the battlefield by providing timely information via the Joint Tactical Terminal and other means.

CHARACTERISTICS: The GR/CS is a Corps level airborne Signals Intelligence collection/location system. The GR/CS integrates the Improved Guardrail V Communication High Accuracy Airborne Location System, and the Advanced Quicklook into the same SIGINT platform. One GR/CS system is authorized per Aerial Exploitation Battalion in the MI Brigade at each Corps. A standard system consists of twelve aircraft which fly operational missions in sets of three. GR/CS provides near real-time SIGINT and targeting information to tactical commanders throughout the Corps area with emphasis on Deep Battle and Follow-on Forces Attack support. Ground processing is conducted in the Integrated Processing Facility (IPF). Interoperable Data Links provide microwave connectivity between the aircraft and the IPF. Primary reporting is accomplished via Commander's Tactical Terminals. Key features include integrated COMINT and ELINT reporting, enhanced signal classification and recognition, near real-time direction finding, precision emitter location, and an advanced integrated aircraft cockpit. Preplanned product improvements include frequency extension, computer assisted on-line sensor management, upgraded data links, and the capability to exploit a wider range of signals. GR/CS shares technology with the Ground Based Common Sensor, Airborne Reconnaissance Low, and other Joint systems.

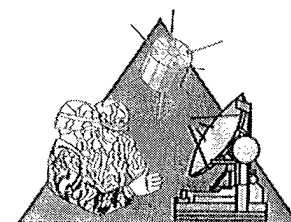
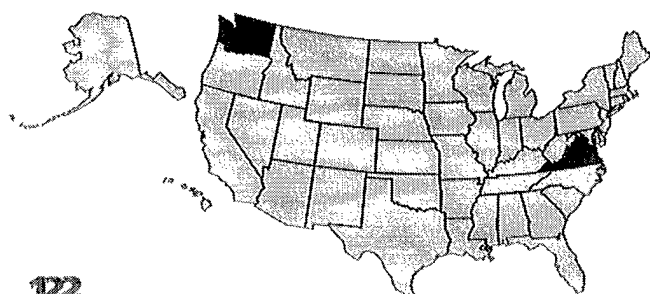
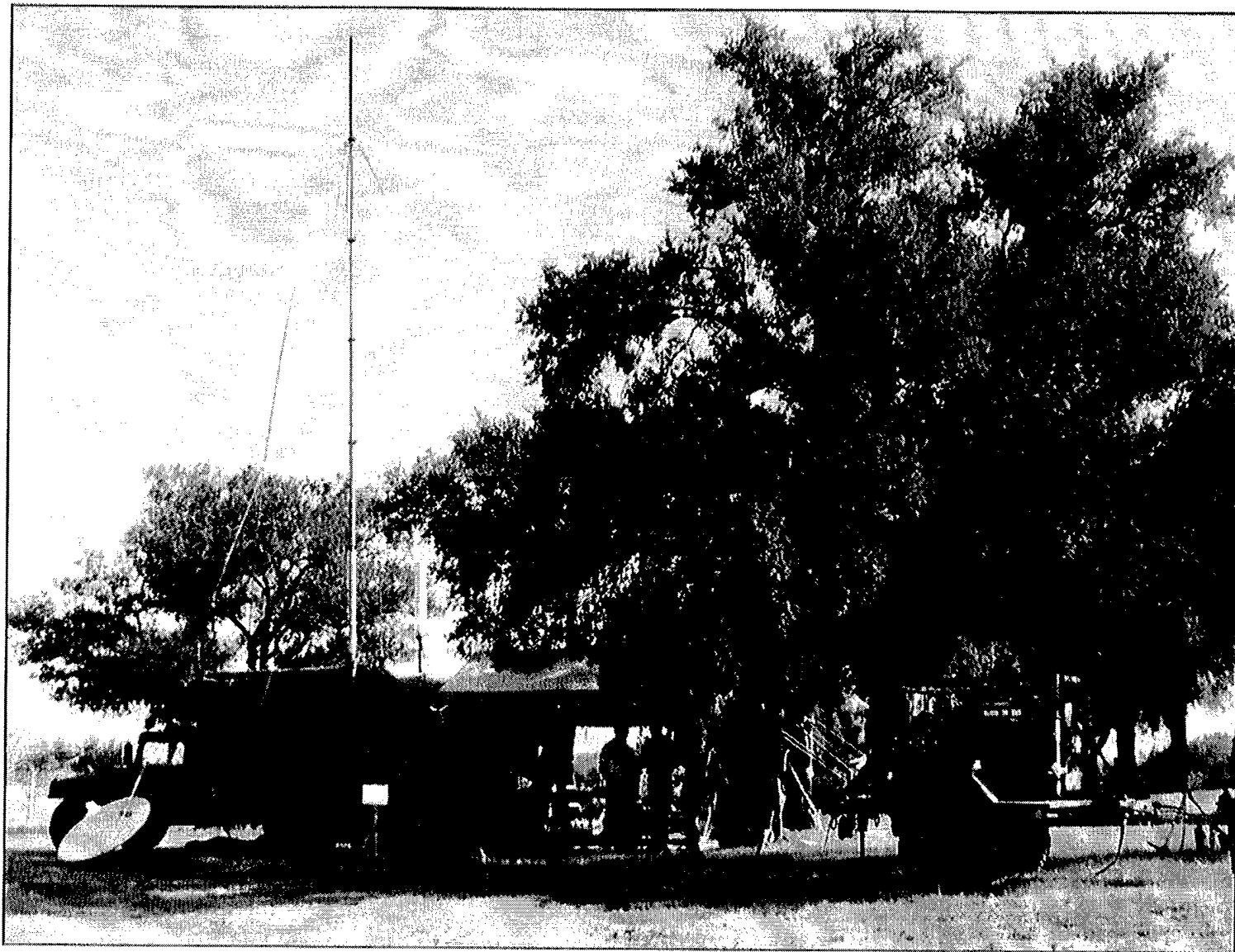
FOREIGN COUNTERPART: Numerous countries possess airborne electronic warfare systems, but none achieves the direction-finding accuracy of the Guardrail system.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The Guardrail systems currently in service include the Improved Guardrail V (RC-12D aircraft) and the Guardrail Common Sensor (RC-12H/K/N/P aircraft). GR/CS was fielded to Korea in 1988, Europe in 1991, and the XVIII Corps in 1994. A remote relay capability that allows forward deployment of aircraft while the ground processing facility remains in CONUS was a component part of the XVIII Corps system. The last GR/CS system is in the production and deployment phase and will be fielded in FY99.

PROJECTED ACTIVITIES: Incorporate TIB/TRIXS capability into all four systems (FY97-99).
Incorporate joint interoperability upgrades to all four systems (FY97-98).

PRIME CONTRACTOR: Raytheon (Raytheon Aircraft) (Wichita, KS)
TRW (Sunnyvale, CA)



CHALLENGE AND TECHNOLOGY	CONCEPT	DEVELOPMENT	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
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PRODUCTION AND DEPLOYMENT

MISSION: The Integrated Meteorological System (IMETS) is the weather component of the Intelligence Electronic Warfare (IEW) sub-element of the Army Battle Command System (ABCS). IMETS provides commanders at all echelons with an automated weather system to receive, process, and disseminate weather observations, forecasts, and weather and environmental effects decision aids to all Battlefield Operating Systems (BOS).

CHARACTERISTICS: Integrated Meteorological System (IMETS) is a Heavy High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) mounted tactical system which provides automation and communications support to Air Force staff weather teams assigned to echelons from brigade through Echelons Above Corps (EAC) and to Army Special Operations Forces. IMETS receives weather information from polar-orbiting civilian and defense meteorological satellites, Air Force Global Weather Central, artillery meteorological and remote sensors, and civilian forecast centers. IMETS processes and collates forecasts, observations, and climatological data to produce timely and accurate weather products tailored to the specific Warfighter's needs. The most significant weather and environmental support to Warfighters are the automated tactical decision aids produced by the IMETS. These graphics go beyond briefing the weather by displaying the impact of the weather on current, projected, or even hypothesized conditions on both friendly and enemy capabilities. Instead of merely reacting to the weather, the Warfighter can take advantage of the enhanced weather knowledge in his planning cycle.

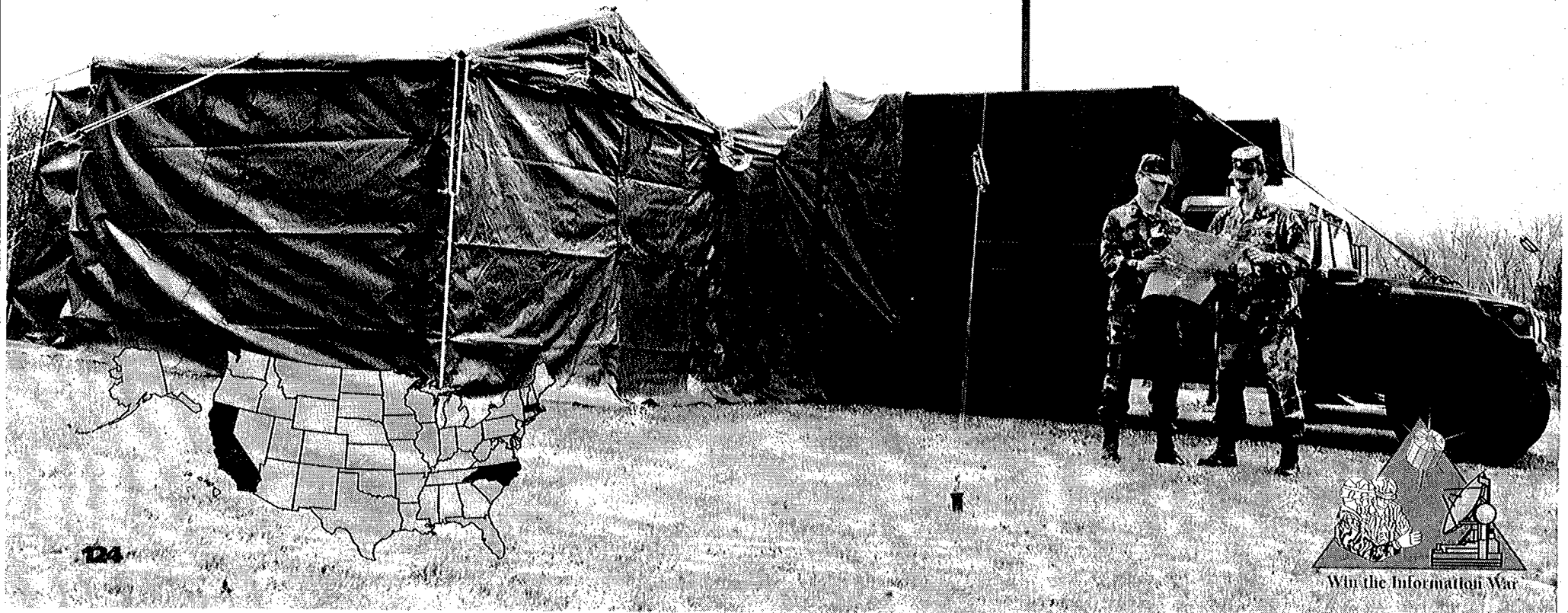
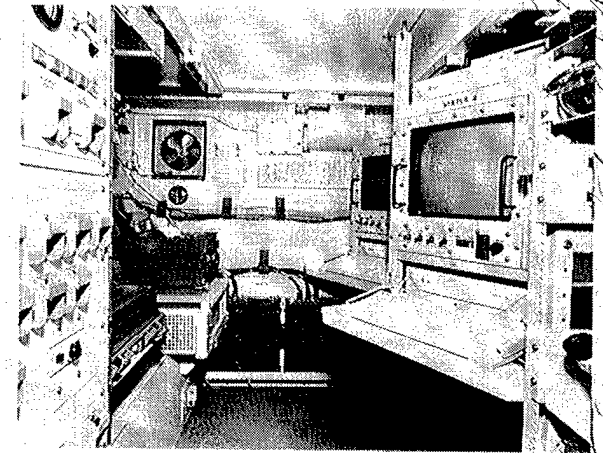
FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: IMETS has a streamlined evolutionary acquisition strategy, relying heavily on commercial off-the-shelf/Government off-the-shelf (COTS/GOTS) and Non-Developmental Items (NDI) products. These products are then packaged into upgrades and enhancements to the fielded IMETS. IMETS was fielded to 15 high priority units through FY96. The IMETS Block II fielding effort will be initiated in FY97 after the successful conclusion of the Developmental Test and Operational Assessment in February 1997. Block II will be fielded to 17 units first, then the Block I systems will be upgraded to the latest configuration.

PROJECTED ACTIVITIES: Complete fielding of IMETS Block I to priority units.
Conduct Technical and Operational Test on IMETS Block II.
Obtain a Milestone III Production and Fielding decision on IMETS Block II.
Initiate Fielding of IMETS Block II systems.
Participate in Task Force XXI and JWID 97 warfighter exercises.

PRIME CONTRACTOR: Logicon (Arlington, VA; Tacoma, WA)
Sytex (McLean, VA)



EMD

Integrated System Control (ISYSCON)

MISSION: The Integrated System Control (ISYSCON) provides an automated, theater-wide system that Signal units can use to manage multiple tactical communications systems in support of battlefield operations.

CHARACTERISTICS: ISYSCON represents the Signal Corps' major thrust to overcome network management problems identified during Operation Desert Storm and other recent deployments. The ISYSCON facility will provide an automated, integrated method for managing the tactical communications network, establish an interface with each technical control facility in the Army Tactical Command and Control System (ATCCS) architecture, and enable automation-assisted configuration and management of a dynamic battlefield. A change to the requirements document has added planning and management of satellite resources as a requirement. The ISYSCON has been selected as the network management system for joint task force use. The spectrum management software has been designated as part of the migration system for DoD use. An ISYSCON node consists of an S-250 shelter on a heavy HMMWV and two extension tents, two server and four client workstations, and peripherals. An ISYSCON node can support up to 20 remote terminals distributed by the S3 to various Signal officers. (Each ISYSCON node will be provided with 10 remote terminals.) Signal S-3 staffs will use ISYSCON to manage Army and JTF tactical battlefield information systems for both deployed and split-based operations.

FOREIGN COUNTERPART: No known foreign counterpart.

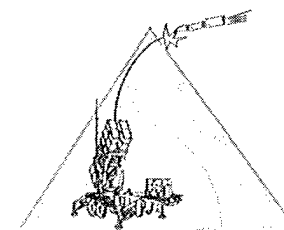
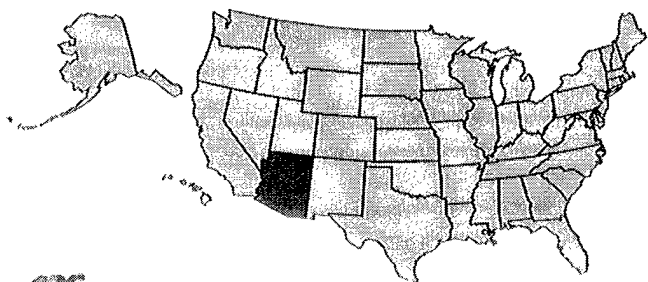
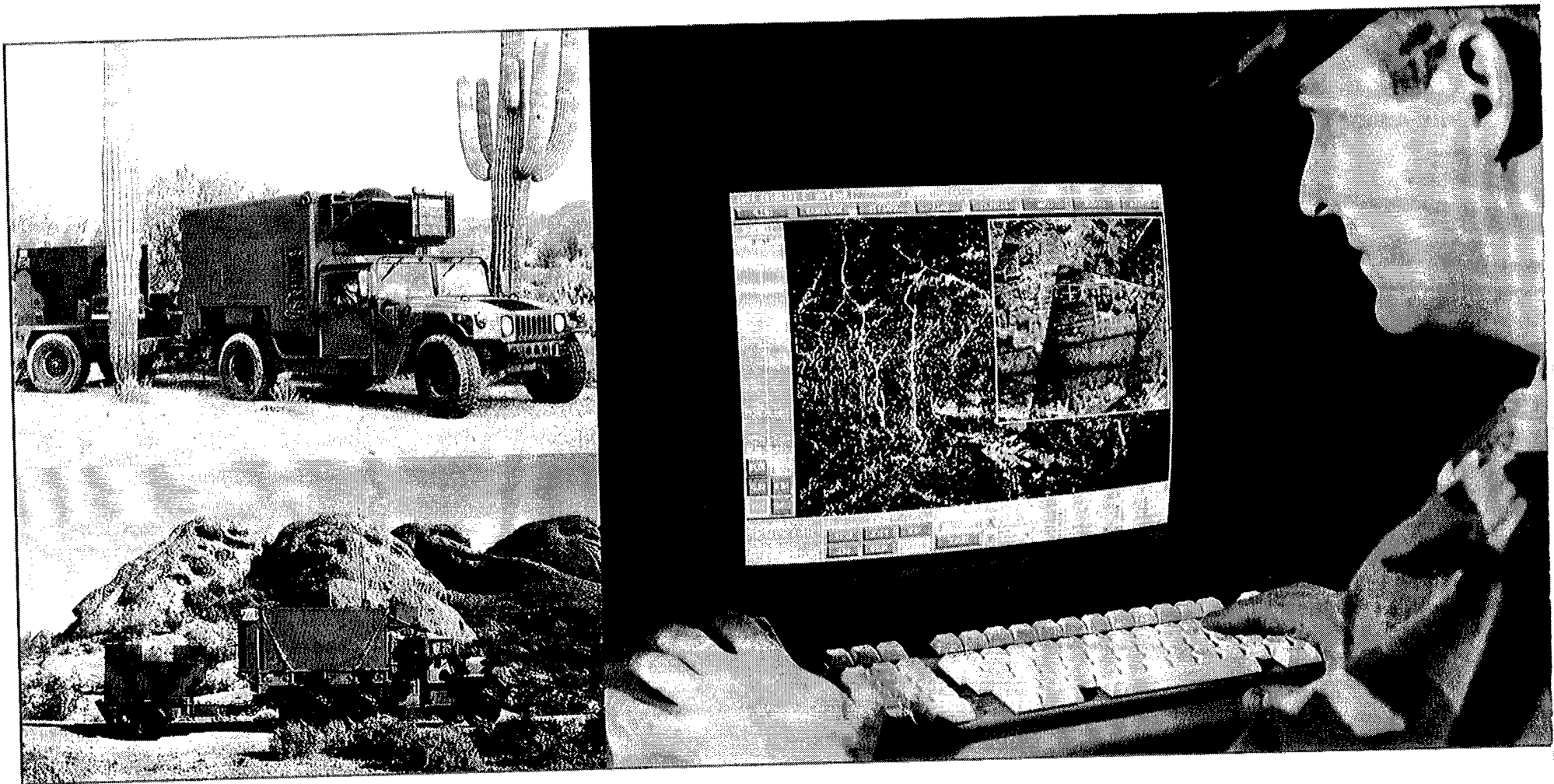
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The ISYSCON contract was awarded to GTE Government Systems in 4QFY92. The program was approved to enter Low Rate Initial Production (LRIP) in 3QFY95, and had a successful Development Progress Review (DPR) in 4QFY97 for the IOT&E. Phase 1 (ECB) capability is anticipated to be fielded to select units in 4QFY97 for the IOT&E.

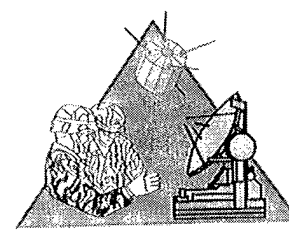
PROJECTED ACTIVITIES: Phase 1 Beta issue is scheduled for 1QFY97 in preparation for ISYSCON Initial Operational Test & Evaluation in 4QFY97. MS III Full Rate Production decision review is planned for 1QFY98. Production contract award will follow in 1QFY98.

PRIME CONTRACTOR: GTE (Taunton, MA; Raleigh, NC)

* See appendix for list of subcontractors.



Protect the Force



Win the Information War



Conduct Precision Strike

SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
			EMD		

MISSION: The Joint Surveillance Target Attack Radar System (Joint STARS) Ground Station Module (GSM) provides long-range radar and other sensor surveillance battle management and targeting data to tactical commanders.

CHARACTERISTICS: Joint STARS is a joint Air Force/Army program. The airborne platform is a USAF E-8 (a militarized Boeing 707) with a multimode radar (capable of wide area surveillance and synthetic aperture modes), 18 operation and control consoles, a Surveillance and Control Data Link (SCDL), and secure communications. Orbiting a safe distance from the Forward Line of Troops, Joint STARS radar scans a wide area of the battlefield at long ranges. The radar data are received by Air Force and Army operators aboard the aircraft and then downlinked to multiple GSMs via the SCDL. The information provides tactical air and ground commanders with near-real-time wide area surveillance and deep targeting data. The Joint STARS system can detect, locate, track, classify, and assist in attacking both fixed and moving targets beyond the FLOT during daylight and darkness in nearly all weather conditions.

The GSM is a mobile, tactical, multisensor ground station that receives, displays, processes, and disseminates targeting battle management and intelligence information to all echelons. In addition to Joint STARS radar data, the GSM is now capable of receiving and displaying Unmanned Aerial Vehicle imagery as well as signals intelligence data via an integrated Joint Tactical Terminal. The GSM is being produced in two variants: a medium version (MGSM) mounted on a 5-ton truck and a light version (LGSM) mounted on a High Mobility Multipurpose Wheeled Vehicle (HMMWV). The Common Ground Station (CGS) will be a light version mounted on a HMMWV. Beginning in FY96, the GSM will transition into the CGS which will also be HMMWV mounted. The CGS will be a key node on the digitized battlefield, receiving multiple national, theater, and tactical sensor input.

FOREIGN COUNTERPART: Britain: Astor France: Horizon Italy: Creso

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The Joint STARS MGSMs have completed the Low Rate Initial Production (LRIP) phase. Fielding of MGSMs started in 2QFY96, and will continue through 2QFY97. LGSM fielding will begin 4QFY97 and continue through 2QFY98. Six Interim GSMs (IGSM) have been fielded to contingency forces and will be cascaded from original units to 3 gaining units 1QFY97 through 2QFY97. The CGS Production Contract was awarded 1QFY96 and initial fielding begins 2QFY98. Fielding of MGSMs will be completed 1QFY97.

PROJECTED ACTIVITIES: Initial Operational Test of the initial CGS units is planned for 4QFY97. The CGS Full Production (Milestone III) Decision is scheduled for FY98.

PRIME CONTRACTOR: CGS: Motorola (Scottsdale, AZ)
* See appendix for list of subcontractors.

PRODUCTION AND DEPLOYMENT

Joint Tactical Terminal (JTT)

MISSION: The Joint Tactical Terminal (JTT) and Commanders Tactical Terminal (CTT) provide the joint warfighter with seamless, near-real-time tactical intelligence and targeting information.

CHARACTERISTICS: The JTT and CTT provide the critical data link to battle managers, intelligence centers, air defense, fire support and aviation nodes across all services. JTT allows Army, Air Force, Navy and Marine Corps users to exploit intelligence broadcast networks, including: Tactical Reconnaissance Intelligence Exchange Service, Tactical Information Broadcast Service, Tactical Related Applications, Tactical Data Information Exchange System-B and Secondary Imagery Dissemination via a General Purpose Link. In addition to receiving intelligence data, data provider or relay functions are provided.

The JTT and CTT are provided for integration into systems on vehicles, aircraft, ships, and fixed sites.

FOREIGN COUNTERPART: No known foreign counterpart.

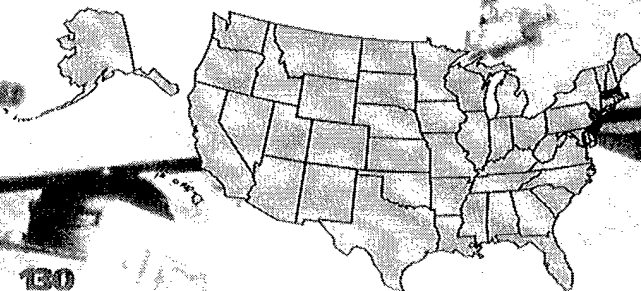
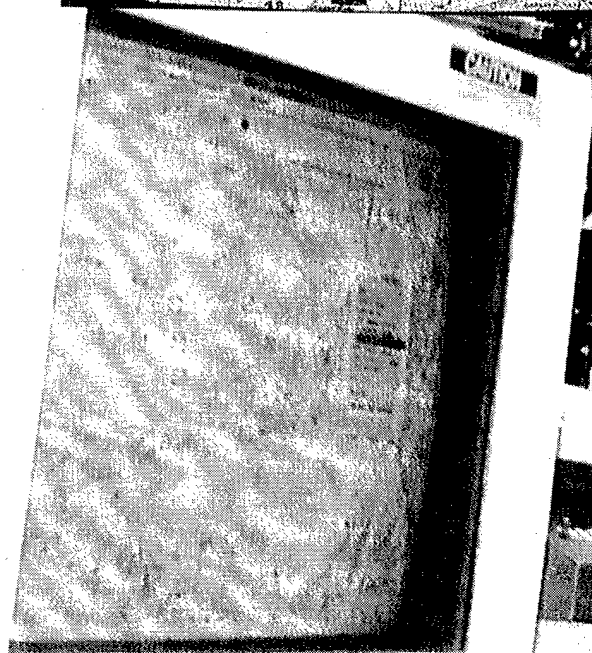
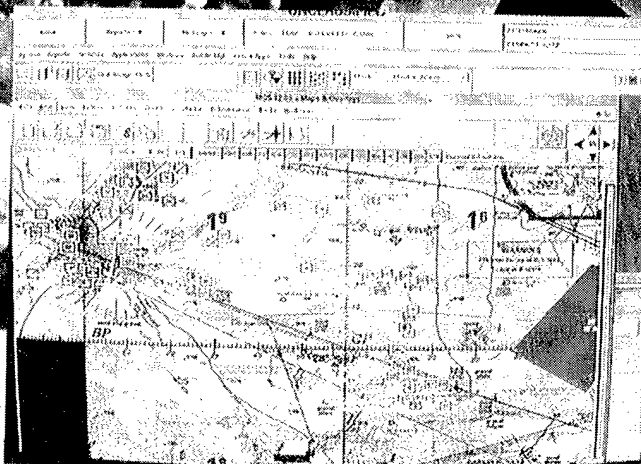
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: A contract was awarded 2QFY96 for 79 CTT3s for the Army, Navy, and Marine Corps urgent requirements. A contract was also awarded 4QFY96 for 85 JTT/Common Integrated Broadcast Service-Modules (JTT/CIBS-M). Fielding of the CTT One Channel is complete. One hundred and eighty CTT Two Channel receivers have been delivered to various elements within the Army, Air Force, Navy, Marine Corps and Special Operating Forces, and fielding continues. Seven CTT3s have been delivered.

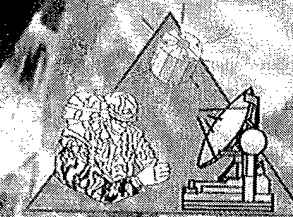
PROJECTED ACTIVITIES: Delivery of 79 urgent CTT3s in 3QFY97. The Integrated Broadcast Service Operational Requirements Document will be approved FY97.

PRIME CONTRACTOR: CTT: E-Systems (ECI Division) (St. Petersburg, FL)
JTT: Hughes (Fort Wayne, IN)

*See appendix for list of subcontractors.



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Win the Information War



Dominate the Maneuver Battle

EMD

Maneuver Control System (MCS)

MISSION: The Maneuver Control System (MCS) provides Army tactical commanders and their staffs (corps through battalion) automated, on-line, near-real-time systems for planning, coordinating, and controlling tactical operations. It automates the creation and distribution of the relevant common picture of the battlefield for the Army Battle Command System (ABCS).

CHARACTERISTICS: MCS is the primary battle command source, providing the common picture, decision aids, and overlay capabilities to support the tactical commander and his staff. It integrates information from other ABCS Battlefield Automated Systems to provide timely accurate status of battle information. V 12 of MCS will provide the initial implementation of the Defense Information Infrastructure (DII) Common Operating Environment (COE) and evolution to the Army Battle Command System. MCS will be fielded on CHS-2 hardware and will implement a client/server architecture.

FOREIGN COUNTERPART: No known foreign counterpart.

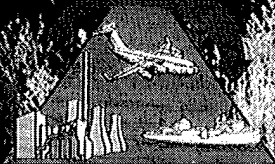
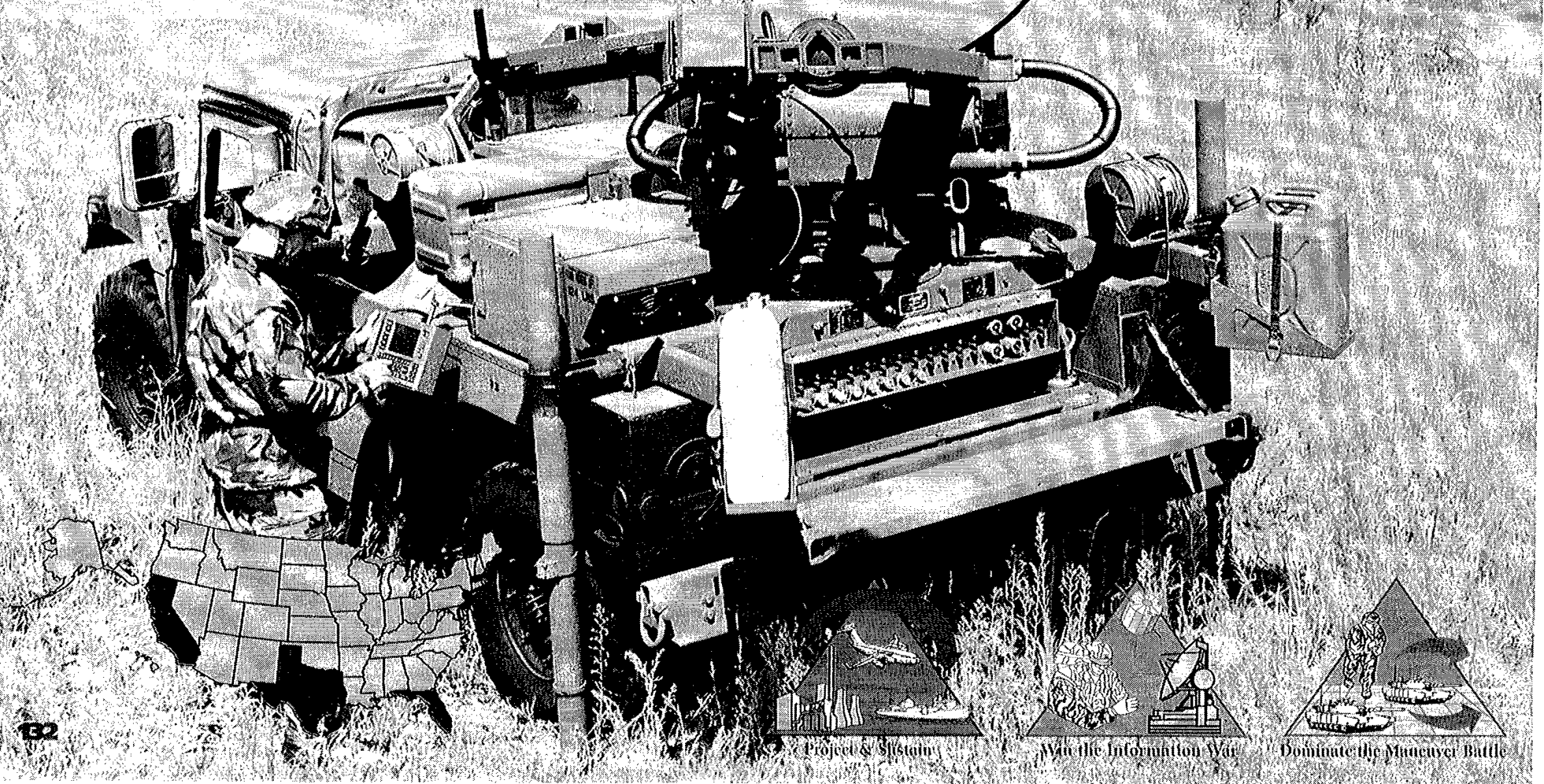
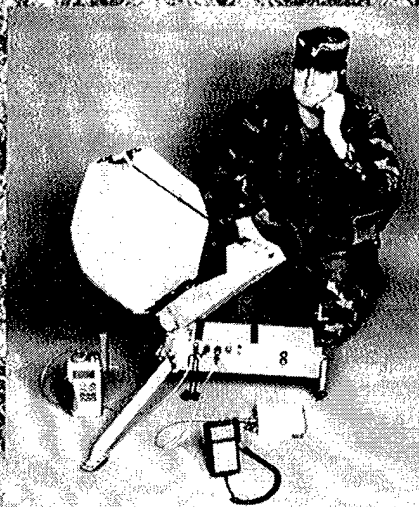
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: Currently, MCS Version 10.03.1G software is fielded to all heavy Army units with non-developmental item equipment. Block IV Development Contract awarded to Lockheed Martin in September 1996.

PROJECTED ACTIVITIES: Participate in Task Force XXI 2QFY97.
Fielding MCS 12.1 with CHS-2 scheduled to begin in FY98.
Beta version issued to selected units.

PRIME CONTRACTOR: Block IV contractor: Lockheed Martin
Block III contractors: CSC (Eatontown, NJ)
Mitre (Eatontown, NJ)
Telos (Shrewsbury, NJ)

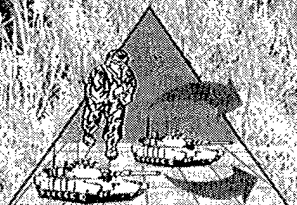
* See appendix for list of subcontractors.



Project & Sustain



Win the Information War



Dominance the Maneuver Battle

EMD

MISSION: The Army is DoD's lead service for development and acquisition of a family of ground terminals for all services and special users, as part of the Extremely High Frequency (EHF) joint Milstar satellite communications program. Milstar satisfies the requirement for worldwide, two way, anti-jam, low probability of intercept, secure voice, and data communications to enable the National Command Authority and Commanders-in-Chief to command and control strategic, operational, and tactical forces through all levels of conflict and crisis. Milstar greatly enhances the fighting effectiveness of US Forces through interservice, interoperable, synergistic command and control communications for all force elements, from special operations to battlefield maneuvers.

CHARACTERISTICS: Milstar provides a seamless, interoperable communications capability that satisfies the Force Projection Army critical operational communications requirement. It provides a range-extension capability that is interoperable with all services and other satellite and ground systems, that keeps up on the battlefield and provides the warfighting commander assured communications. The terminals are capable of rapid set-up and tear-down and provide uninterrupted, secure, anti-jam communications for tactical forces, even under harsh electromagnetic conditions. The SMART-T, mounted on a standard HMMWV, provides range extension for the Army's Mobile Subscriber Equipment system at Echelons Corps and Below. It processes data and voice communications at both Low Data Rate (LDR) and Medium Data Rate (MDR) (75 bps - 1.544 mbps). SCAMP is a manportable, battery-powered terminal that provides LDR secure voice at 2400 bps and secure data at 75-2400 bps. The user owned and operated SCAMP has embedded COMSEC and TRANSEC and includes an accessory AC/DC converter to enable the terminal to function on external power. In addition, the terminal provides a capability to operate in four simultaneous, half duplex, communications channels. Efforts are underway for the development of technologies leading to an objective SCAMP Block II 12-15 pound manpackable terminal. The Army is also integrating eight Air Force procured Ground Command Post (GNDGP) Terminals into the Army force structure. The GNDGP is a network control terminal, in fixed and transportable configurations, which operates and manages assigned service/CINC Milstar communications and user priorities.

FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: SMART-T: PEO C3S Low Rate Initial Production (LRIP) In-Process Review - Jan 96. Down select and award of LRIP/Full Rate Production (FRP) contract to Raytheon - 7 Feb 96.

SCAMP: Competitive, best value, source selection, including equipment demonstrations 1-2QFY96. Production Contract awarded to Rockwell International 2QFY96.

PROJECTED ACTIVITIES: SMART-T: Initial Operational Test & Evaluation (IOT&E) - FY98. First Unit Equipped (FUE) - FY98.

Milestone III Decision to enter FRP - FY99.

SCAMP: Follow-on test & evaluation (FOT&E) - 4QFY97. FUE - 1QFY98.

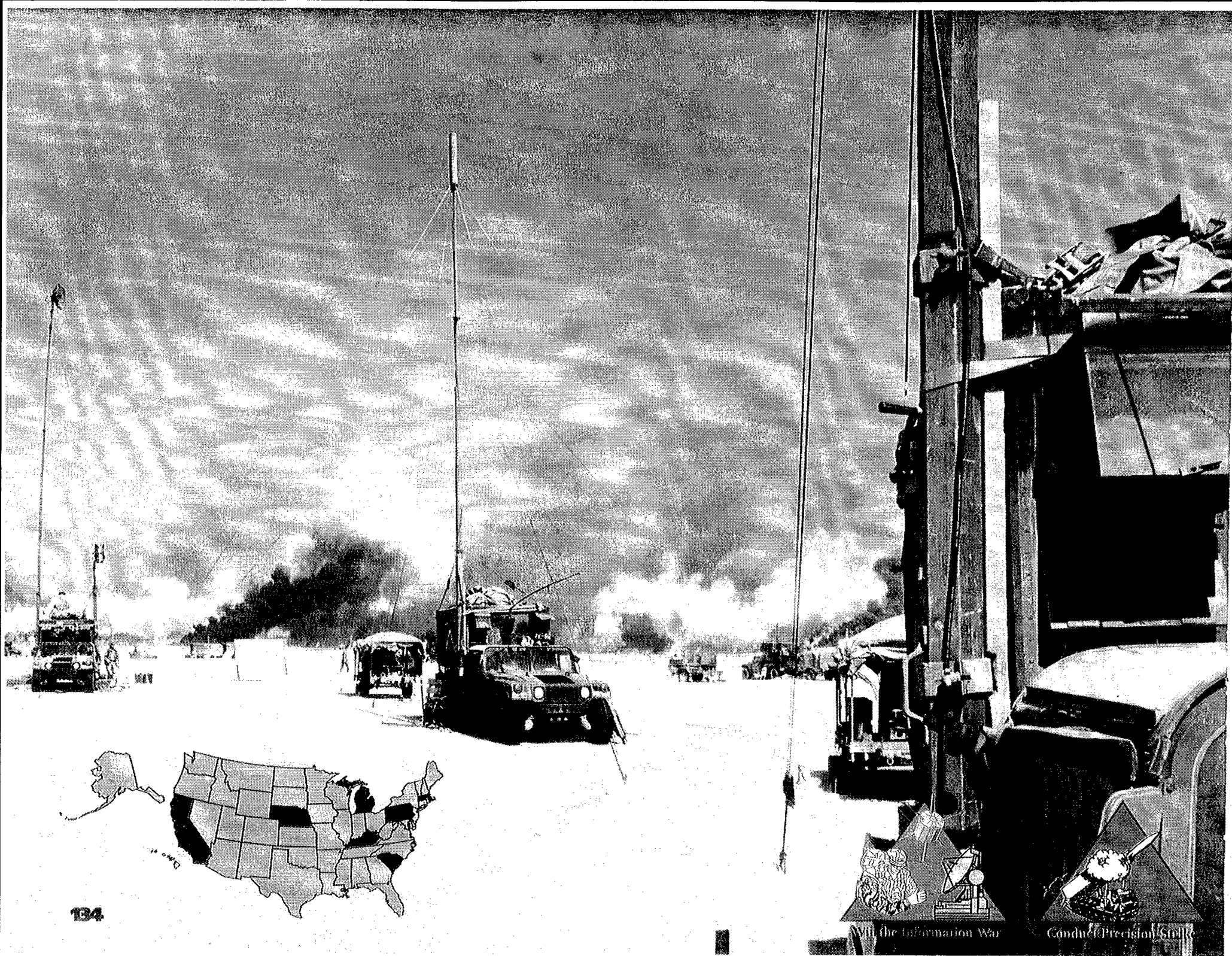
Award contract(s) for Engineering Feasibility Efforts (EFE) to support the Block II program - FY97

PRIME CONTRACTOR: SMART-T: Raytheon Electronics Systems Division (Marlboro, MA)

SCAMP: Rockwell International (Richardson, TX)

SCAMP Block II: TBD

*See appendix for list of subcontractors.



MISSION: The Mobile Subscriber Equipment (MSE) provides the tactical U.S. Army commander with a secure, automatic, highly mobile, quickly deployable, survivable, tactical communications system capable of passing data, facsimile, and voice traffic throughout the division and corps area of operations.

CHARACTERISTICS: The major items of equipment are integrated into five functional areas. Subscriber Terminals provide the voice and data elements to interface with other functional areas of the MSE system. Mobile Subscriber Access radiotelephone terminals permit mobile and stationary users to automatically communicate secure voice and data throughout the tactical area of operations. Wire Subscriber Access allows nonradio users entry to the MSE system through concentrations of automatic switching equipment. Area coverage of the battlefield from mobile or fixed locations is achieved through secure automatic switching, continuous coverage, and the ability of commanders and staff to retain the same telephone number regardless of location. System Control provides an automated Corps-wide MSE system management capability, which is itself mobile, moving with the elements it controls.

FOREIGN COUNTERPART: No known foreign counterpart.

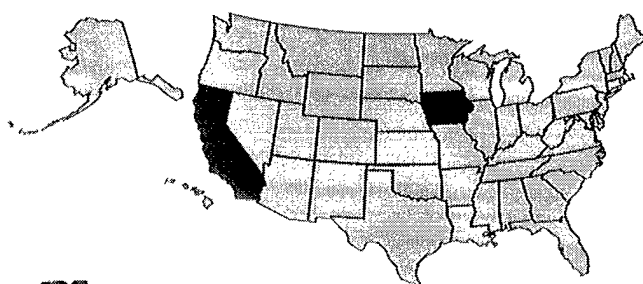
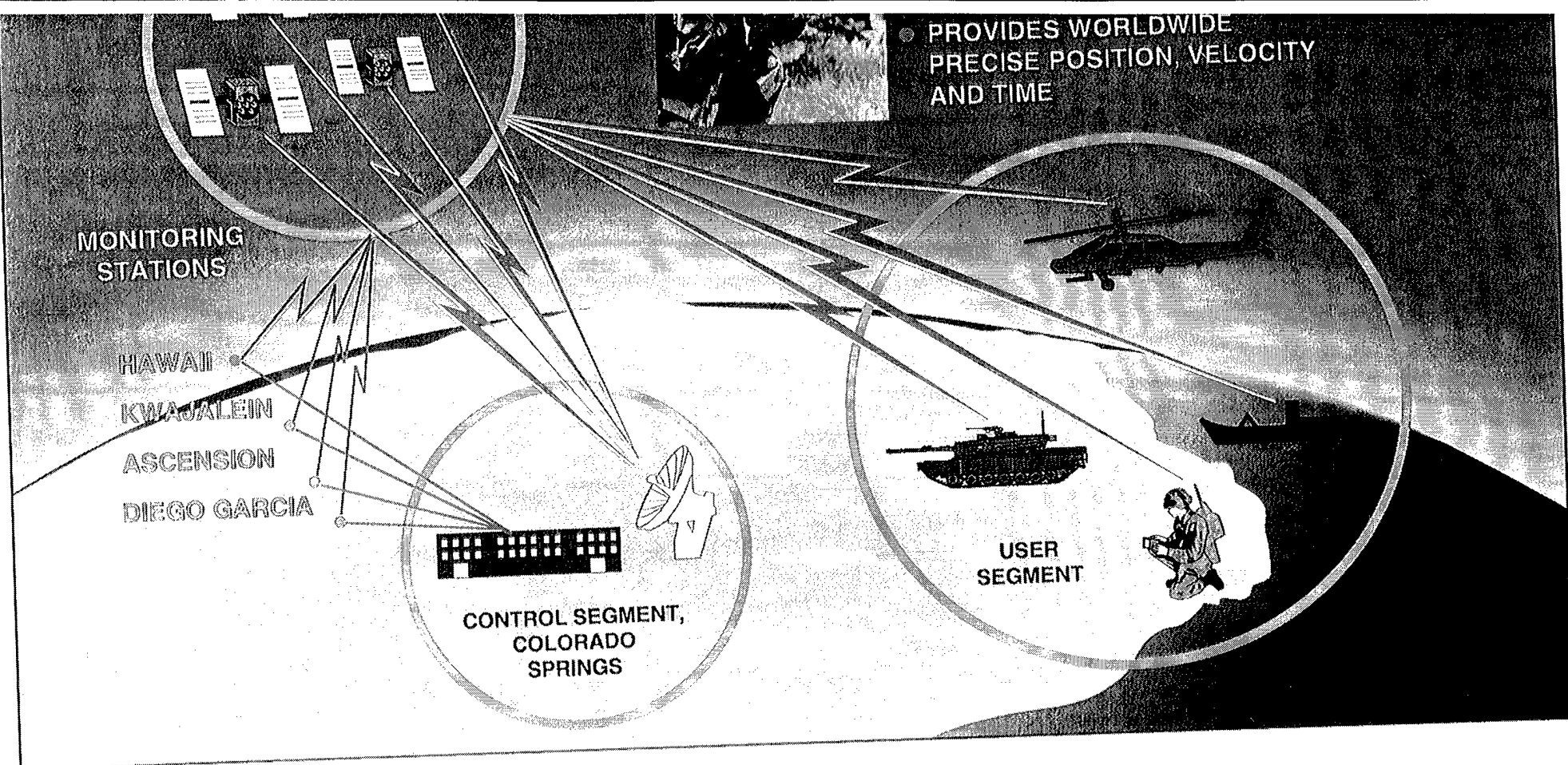
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: All Signal Battalions scheduled to receive MSE have been successfully fielded. Final unit fielding was completed in November 1993. An approved System Modernization Plan (SIP) is in place to provide technological upgrades that will improve system performance and extend the life of the equipment. A routing improvement program (CSRIP) is currently being fielded and will provide a common software baseline for MSE and AN/TTC-39 A/D switches.

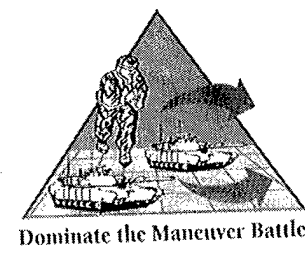
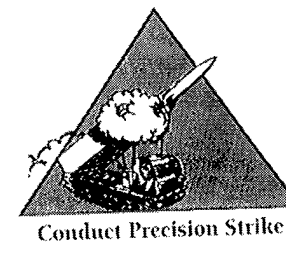
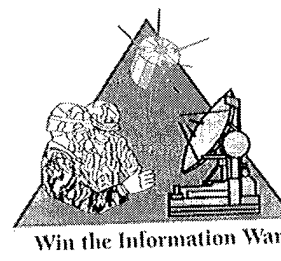
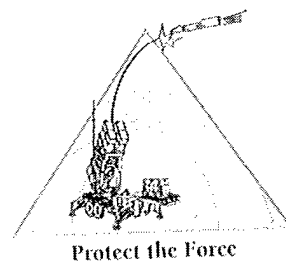
PROJECTED ACTIVITIES: Enhanced Switch Operation Program.
Packet Network Management Center Improvements.
Training Device Upgrade.
Network Management Tool Implementation.
Internet Protocol Router (BGP-4) Upgrade.
Continue Routing Improvement Program (CSRIP).
Incorporate Asynchronous Transfer Mode (ATM) technologies.

PRIME CONTRACTOR: GTE (Taunton, MA)

*See appendix for list of subcontractors.



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PRODUCTION AND DEPLOYMENT

NAVSTAR Global Positioning System (GPS)

MISSION: The mission of NAVSTAR Global Positioning System (GPS) is to provide accurate, continuous, all-weather, common grid, worldwide navigation, positioning, and timing information to land, sea, air, and space-based users.

CHARACTERISTICS: The NAVSTAR GPS is a joint Army, Navy, and Air Force program, with the Air Force as the lead service. GPS is a space-based navigation, three-dimensional positioning, and time-distribution system. The GPS has three segments: a space segment, consisting of 24 satellites; a ground control segment; and a user segment. The Army is the lead service in the Joint Program Office for the Ground User Segment with approximately 80% of total DoD requirements. The user segment consists of receiver configurations for ground, aircraft and seacraft applications. The GPS receiver is a passive device that will be deployed extensively at all echelons and with Army aircraft.

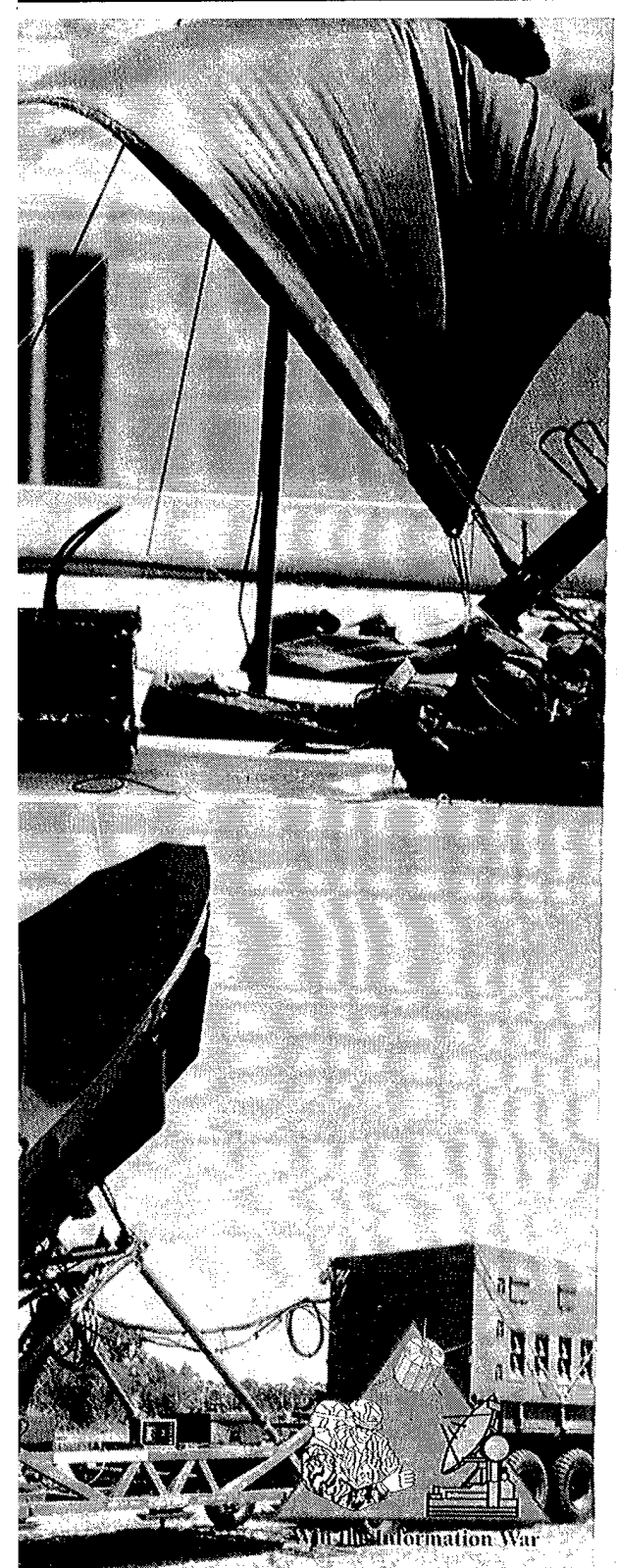
FOREIGN COUNTERPART: The Russians have developed a similar system, GLONASS. Financed through European firms, GLONASS has matured to 21 spacecraft. GLONASS operates in a different portion of the same frequency band as NAVSTAR GPS, with slightly less accuracy.

FOREIGN MILITARY SALES: Coded FMS GPS Receivers are handled by the Air Force GPS Office through Joint coordination. Standard commercial GPS receivers are a world open market resource.

PROGRAM STATUS: The last Precision Lightweight GPS Receiver (PLGR) production option will be awarded in 2QFY97. The Army has acquired 100,000 hand held units to date and worldwide fielding has been ongoing since October 1993 on an accelerated basis. The PLGR enhancement was awarded May 1995 and provides Army users with the following: 50% lower power consumption, improved ease of use, automatic leg advance, updated datums, enhanced satellite vehicle selection for reduced re-acquisition time, magnetic variation entry/display improvements, larger user defined screens, more routes and legs, auto zeroized warning, and present position naming. As SLGRs are rapidly displaced by PLGRs, 1000 SLGRs will be upgraded to Precise Positioning Service (PPS) accuracy and reallocated as inexpensive receivers for the non-modernized rotary wing fleet. These receivers will be designated as Stand Alone GPS Receivers (SAGRs). The Miniaturized Airborne GPS Receivers (MAGR), the AN/ASN-149 and GPS embedded in AN/ASN-128/G and INS are for modernized aircraft fleet. The Cargo Utility GPS Receiver (CUGR) will be the objective solution for UH-1 aircraft. A contract award for CUGR was awarded in September 1996. The Army has completed a new operational requirement for PLGR replacements. The Direct Access GPS Receiver (DAGR) requirement consists of 114,000 units with initial production in FY99.

PROJECTED ACTIVITIES: PM GPS will complete fielding of PLGR to all major Active Army elements during 1QFY97. Total PLGR fielding for FY97 is approximately 12,000. Option 5 award for MAGR is planned for March 1997. Aside from the DAGR initiative, the Army is conducting extensive research in GPS navigation

PRIME CONTRACTOR: Rockwell International (Cedar Rapids, IA)
Trumble Navigation (Sunnyvale, CA)



Winning the Information War

PRODUCTION AND DEPLOYMENT

MISSION: The mission of Satellite Communications (SATCOM) is to satisfy Joint Chiefs of Staff validated Command, Control, Communications, Computers, and Intelligence (C4I) requirements supporting the President, National Command Authority, Commanders in Chief (CINC), Military Departments, Intelligence community, and NATO. Satellite communications provide the CINC the reach-back capability between the forward deployed force and the CONUS sustaining base required to support Army power projection.

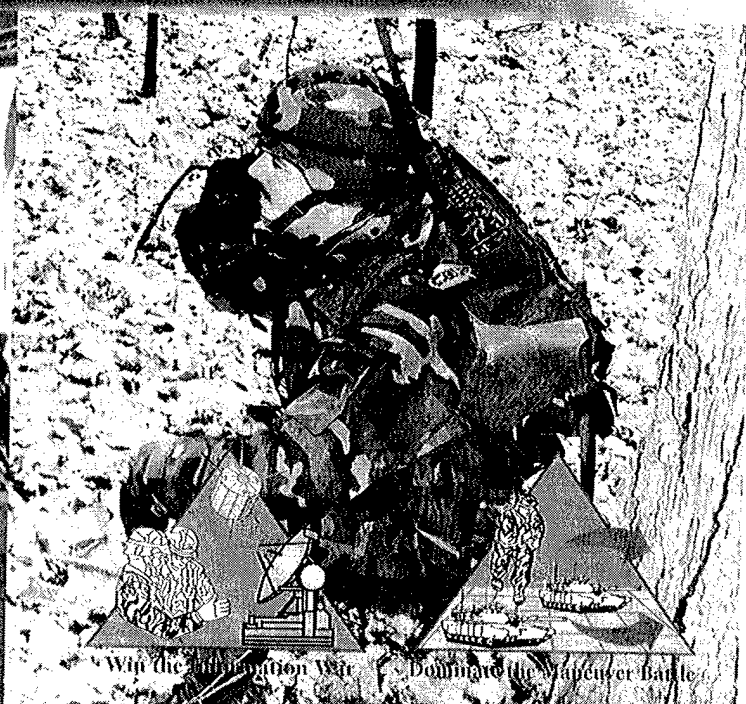
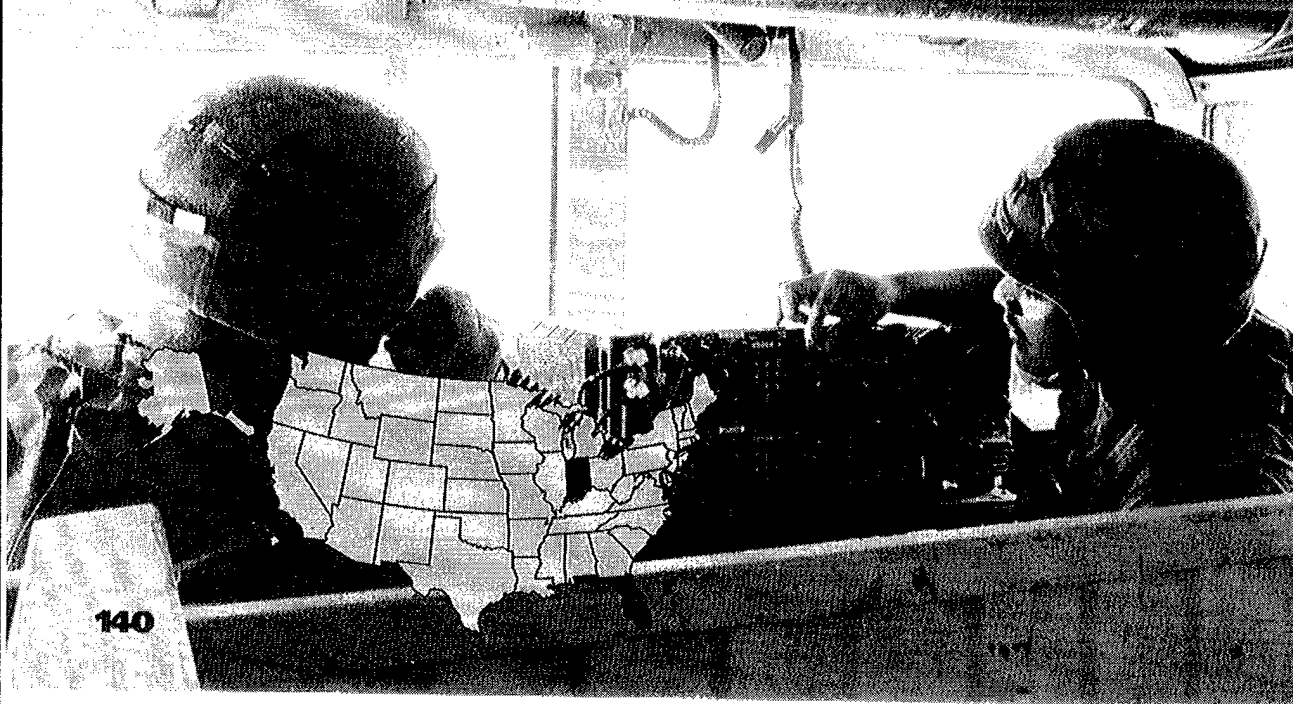
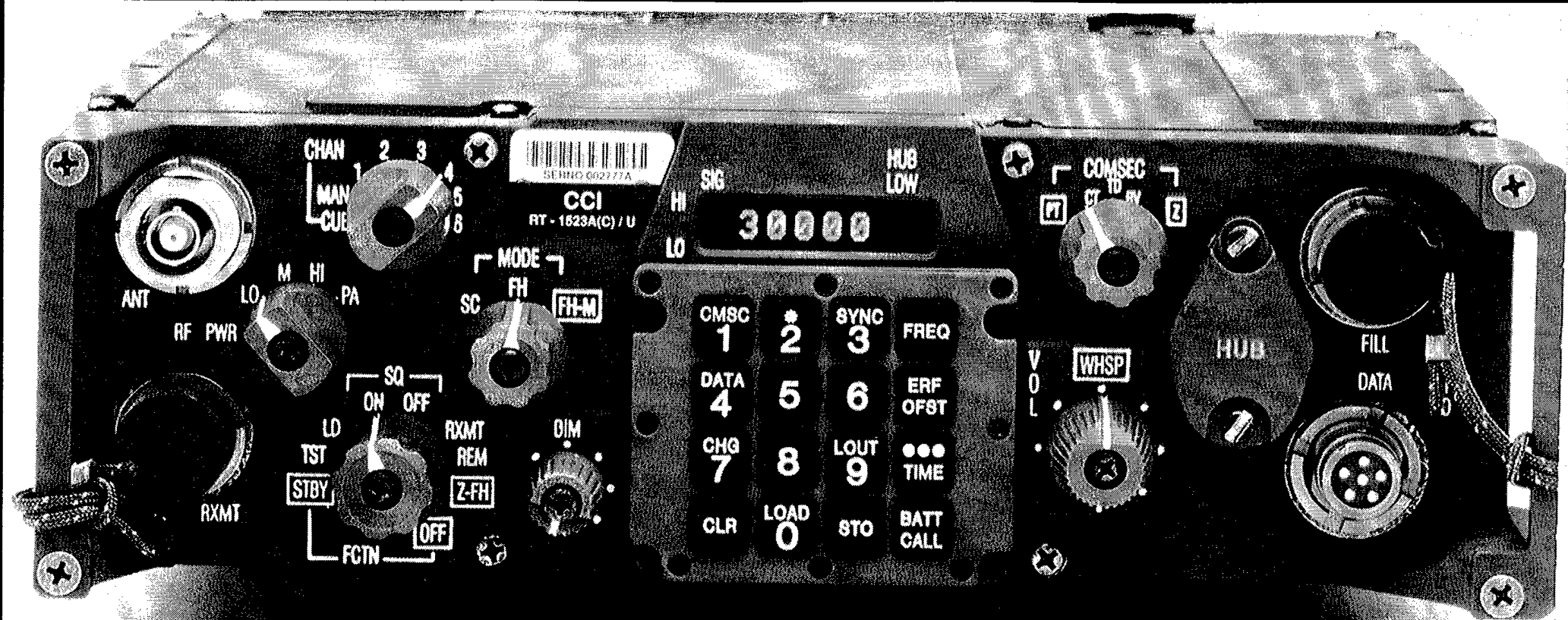
CHARACTERISTICS: Fixed strategic, theater, and mobile tactical satellite (TACSAT) communications terminals characterize SATCOM. The satellite equipment uses all DoD SATCOM systems, including the Fleet Satellite/Air Force Satellite (FLTSAT/AFSAT) Ultra High Frequency (UHF) system, UHF follow-on (UFO) system, and the Defense Satellite Communications System (DSCS) Super High Frequency (SHF) X-Band.

PROGRAM STATUS: The Army is procuring the AN/PSC-5 Spitfire UHF Manpack Terminal a/k/a EMUT and related equipment in support of the Army, Air Force, Marine Corps, and Special Operations Forces unit requirements for use on FLTSAT/AFSAT/UFO. The Spitfire has embedded Communications Security and demand assigned multiple access capability. For SHF TACSAT Terminals, the Army acquired, tested, and fielded the AN/TSC-143 Prototype Tri-Band Terminal (PT3) to the 11th Signal Brigade, Power Pac 3 Company. Additionally, Army is procuring the SHF TRI-BAND Advanced Range Extension Terminal (STAR-T) which will be an SHF terminal mounted in a HMMWV and will eventually replace the AN/TSC-85B/93B Tactical Satellite Terminals for the Army. These terminals will expand TACSAT capabilities because they are capable of using commercial C or Ku bands, or the existing DSCS X Band. For the strategic DSCS, the Army will continue to modernize its heavy and medium fixed terminal facilities and transportable terminals, and modernize the light contingency terminals, provide digital equipment upgrades, and expand the control subsystem to enhance satellite and communications payload control operations. Contract awarded for four SOFTACS LRIP terminals in August 1996. STAR-T will be an option to this contract Milestone I-IIIa planned for 1QFY97 and contract option award planned for 2QFY97.

PROJECTED ACTIVITIES: Continue the modernization of all the fixed site AN/FSC-78/79 SATCOM terminals through FY99. Initiate the modernization of the AN/GSC-52 SATCOM terminals (fixed and transportable) in FY97. Initiate Universal Modem System (UMS) production and award contract in FY97. Continue on-going DSCS ground segment Control System upgrade in accordance with the Objective DSCS Operations Center Operational Requirements Document.

PRIME CONTRACTOR: Cincinnati Electronics (Cincinnati, OH)
Harris (Melbourne, FL)
Magnavox (Ft. Wayne, IN; Torrence, CA)
Raytheon (Marlborough, MA)
Titan (San Diego, CA)

GTE (Taunton, MA)
Lockheed Martin (Bethesda, MD)
Motorola (Scottsdale, AZ)
Stanford Telecommunications (Colorado Springs, CO)



With the Information War Dominating the Modern Battle

MISSION: The Single Channel Ground and Airborne Radio System (SINCGARS) provides commanders with a highly reliable, secure, easily maintained Combat Net Radio (CNR) that has both voice and data handling capability in support of command and control operations. The radio, along with the ADDS, forms the communications backbone for Force XXI.

CHARACTERISTICS: SINCGARS configurations include manpack, vehicular (both low and high power), and airborne models. Communications Security (COMSEC) is integrated in currently produced versions of the ground and the airborne radios, and the System Improvement Program (SIP) models providing upgrades to enhance operational capability in the tactical internet environment.

FOREIGN COUNTERPART: Racal (UK), Thomson CSF(FR), Marconi (Belgium), Erichssen (Norway)

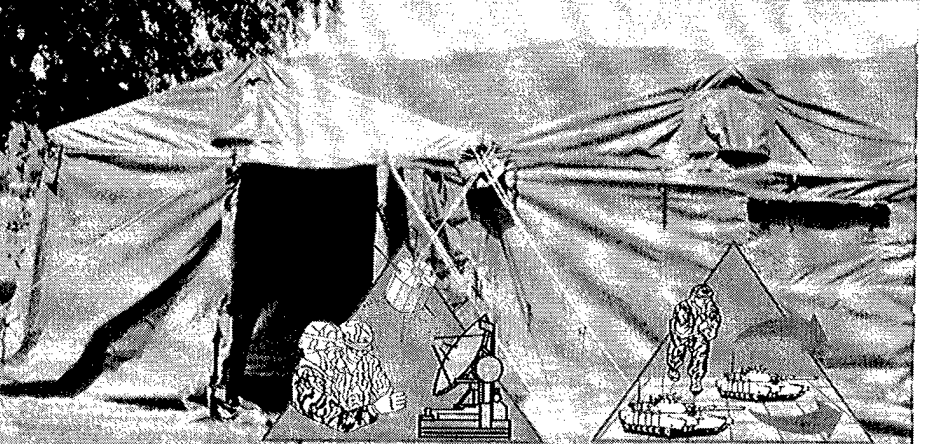
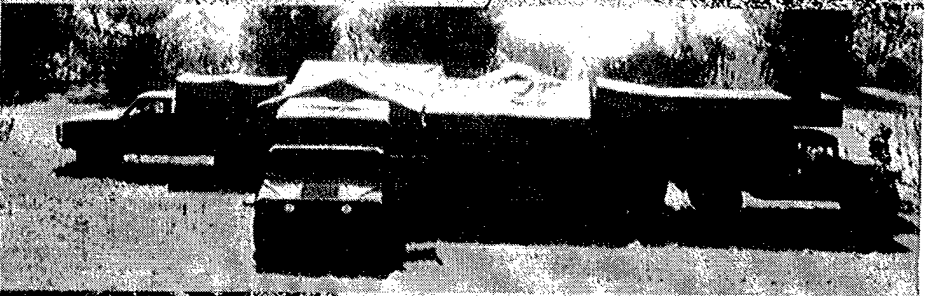
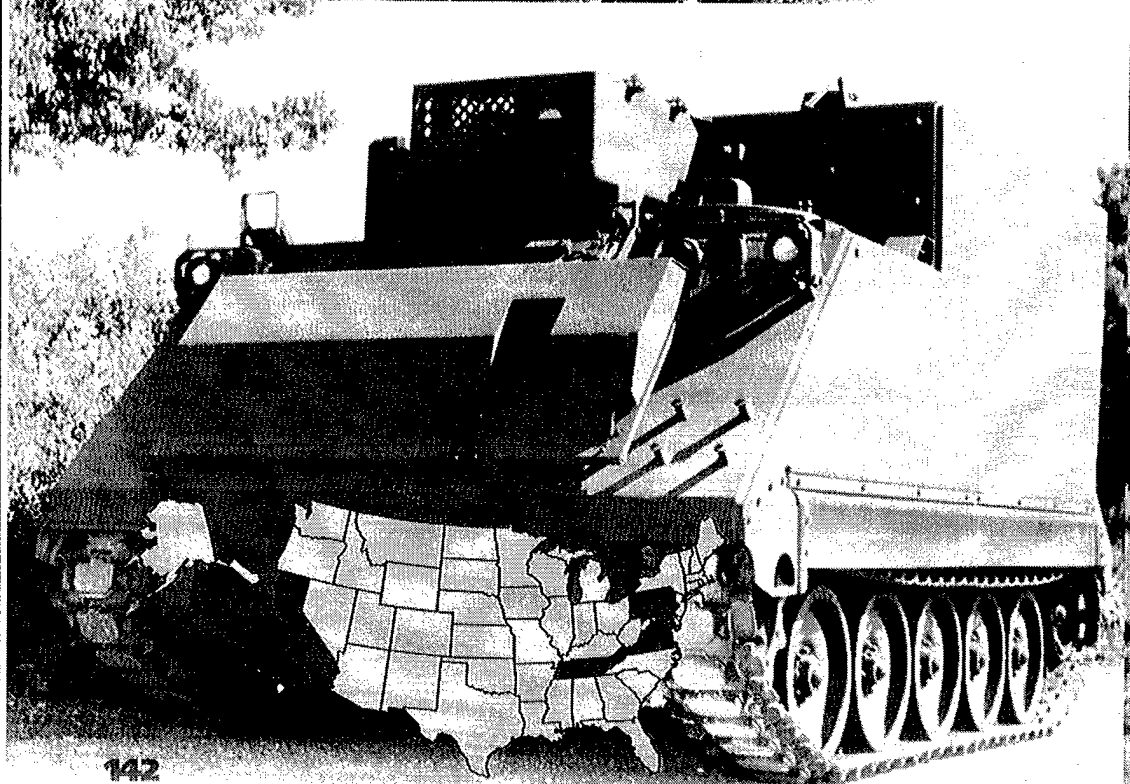
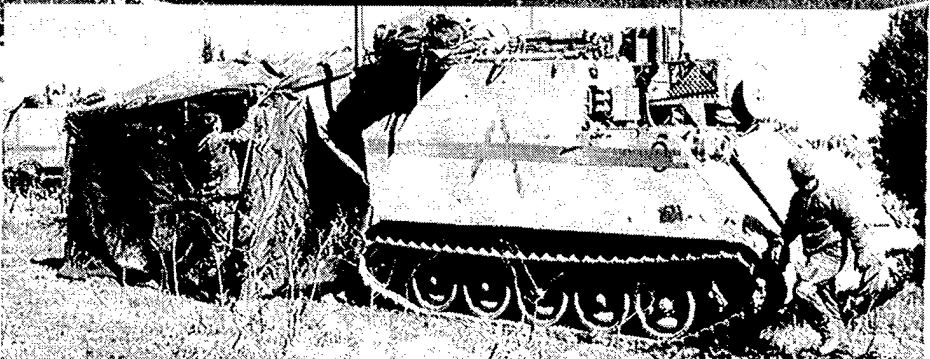
FOREIGN MILITARY SALES: Bahrain, Finland, Greece, Italy, Kuwait, Morocco, Saudi Arabia National Guard, SHAPE Tech Ctr (NATO), Spain, Special Def Acq Fund (pre-purchased export model assets for FMS Sales)

PROGRAM STATUS: First source, International Telephone and Telegraph (ITT), SINCGARS ground radios passed First Article Tests in January 1988, and production deliveries began immediately. A Follow-On Test and Evaluation (FOTE) was successfully completed in May 1988 on the non-integrated COMSEC (non-ICOM) version of the radio. Initial and Follow-on Operational Test and Evaluation (IOTE and FOTE) were successfully completed on the ICOM radio in November 1990. Award for Option 3 for 16,000 radios was made in June 1989. Option 4 for 16,000 radios was awarded in 1QFY91, completing the first-source contract of 44,100 ground radios. Subsequently, a new contract for first-source production was awarded for 16,000 radios in March 1992, with another 16,000 radio award in FY93. ITT is also the sole producer of the airborne SINCGARS, with contracts awarded for almost 6,361 units. A second-source of ground radios, General Dynamics Land Systems (GDLS), was selected in July 1988 and awarded a firm fixed price, base year contract for 400 radios. Second-source First Article Test was successfully completed in July 1992, and IOTE was successfully completed in February 1993. General Dynamics was awarded a Low-Rate Initial Production contract for an additional 7,500 ground radios. A second-source, full-scale production award for 12,000 radios was made in August 1993. Annual dual source limited competition began in FY94, with award in April 1994 of 17,053 units to ITT and 11,369 units to GDLS. FY95 limited competition awards were made in March 1995 for System Improvement Program (SIP) radios, 18,601 to ITT and 15,219 to GDLS. FY96 limited competition awards were made in March 1996 for an additional 23,716 SIP radios. These radios will provide improved data capability, improved forward error correction for low speed data modes, automated interface into the Automated Common User System and a Global Position System interface and Internet Controller which allows SINCGARS to interface with EPLRS and Battlefield Functional Area and other host computers. Annual dual source limited competition for the SIP system components will continue in FY97. The program office has fielded more than 85,000 radios to the training base and Army units worldwide. Dual source limited competition awards were made for SIP radios in March 1996.

PROJECTED ACTIVITIES: Dual source limited competitive award is scheduled for 2QFY97.

PRIME CONTRACTOR: General Dynamics (Tallahassee, FL)
International Telephone and Telegraph (Ft. Wayne, IN)

* See appendix for list of subcontractors.



PRODUCTION AND DEPLOYMENT

Standardized Integrated Command Post System (SICPS)

MISSION: The Standardized Integrated Command Post System (SICPS) is a family of standard command post (CP) facilities developed to house the Army Battle Command System across all Battlefield Functional Areas (BFA). Variants of SICPS consist of a Tent CP, a Rigid Wall Shelter CP, a Track Vehicle CP (M1068), a 5-Ton Expansible Van CP, and a Soft Top HMMWV CP.

CHARACTERISTICS: **Tent CP:** 11 ft x 11 ft supported by a three-piece aluminum frame, with interchangeable fabric sidewalls, any of which can be removed for attaching two or more tents together. Fielded with two tables, two mapboards, and a fluorescent light set. The Tent CP can be attached to any of the other SICPS variants, except the 5-Ton Expansible Van CP, by replacing one sidewall with an interface boot wall.

Rigid Wall Shelter CP: Mounts on the HMMWV shelter carrier (M1097) and is powered by an on-board 10 kW generator. Provides equipment racks, internal lighting and blackout, power and signal import/export panels, internal wiring/cabling, vehicular intercom system, 18000 BTU environmental control unit, chemical/biological protection, electromagnetic interference shielding, Quick Erect Antenna Mast (QEAM), and workspace for two each Command, Control, Communications, Computers and Intelligence (C4I) workstations and operators.

Track Vehicle CP: Modification of existing M577 track vehicle to M1068 CP vehicle by addition of on-board 5 kW generator, equipment racks, internal lighting, power and signal import/export panels, internal wiring/cabling, vehicular intercom system, QEAM, and workspace for two each C4I workstations and operators.

5-Ton Expansible Van CP: An installation kit, M-2780/G, for existing 5-Ton Expansible Van (M934A2) which provides equipment racks, internal lighting and blackout, power and signal import/export panels, internal wiring/cabling, QEAM, and workspace for four each moveable C4I workstations and operators.

Soft Top HMMWV CP: An installation kit, M-2727/G, for existing HMMWV that provides equipment racks, internal lighting and blackout, power and signal import/export modules, internal wiring/cabling, mount for QEAM, and workspace for two each C4I workstations and operators.

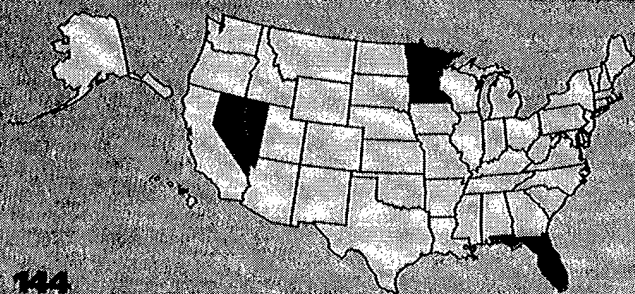
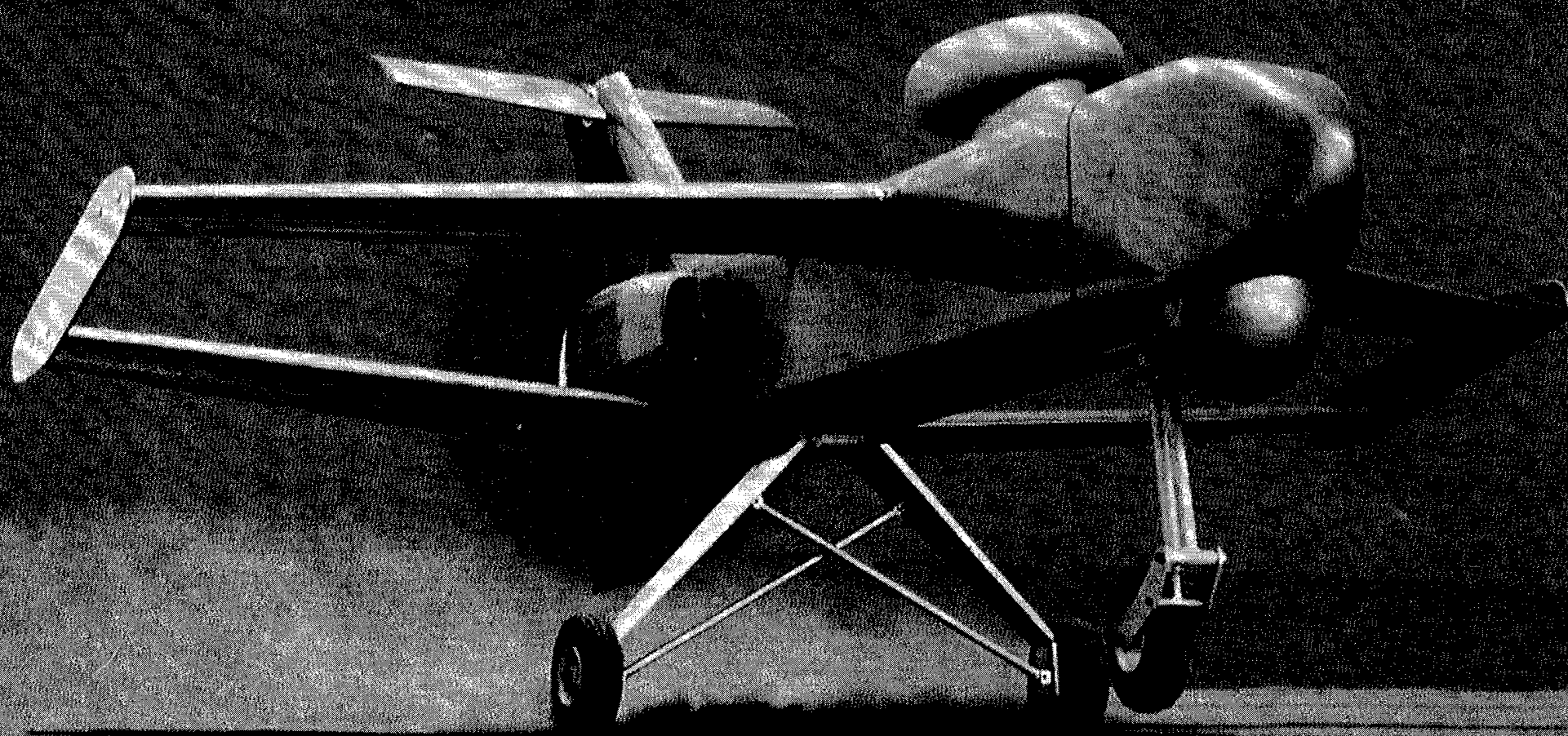
FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

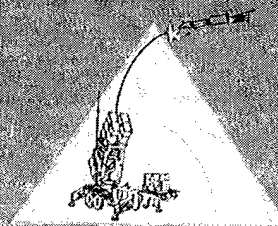
PROGRAM STATUS: **Tent CP:** Type Classified (TC) Standard, Feb 90; production contract, Aug 91. On-going fielding.
RWS CP: Version 1, TC limited Procurement Urgent, Aug 91. Production contract, Sep 91. On-going fielding. Version 4, Milestone III, Aug 96. Start production, Oct 96.
Track CP: Production contract awarded, Jun 92. TC Standard, Sep 95. On-going fielding.
5-Ton Expansible Van CP: Milestone III, Aug 96. Start production; TBD.
Soft Top HMMWV CP: Production contract, Jun 95; TC Standard, Oct 95. First delivery, Aug 96.

PROJECTED ACTIVITIES: Provide SICPS Tent, RWS, M1068, 5-Ton, and Soft Top platforms to support BFA requirements.

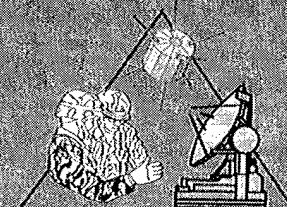
PRIME CONTRACTOR: **Tent CP:** Camel (Knoxville, TN)
Track CP: FMC (United Defense, LP) (San Jose, CA)
RWS CP: TBD
5-Ton and Soft Top CP: Tobyhanna Army Depot (Tobyhanna, PA)



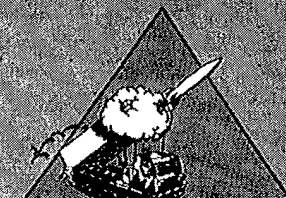
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Protect the Force



Win the Information War



Conduct Precision Strike

SCIENCE AND TECHNOLOGY

MISSION: The Outrider Tactical Unmanned Aerial Vehicle (TUAV) will provide Reconnaissance, Surveillance, and Target Acquisition (RSTA) to U.S. Army Divisions and Brigades and to U.S. Marine Corps expeditionary brigades, and Navy ships at a range up to 200 km, day or night, and in limited adverse weather conditions.

CHARACTERISTICS: The Outrider TUAV is intended for use in environments where real-time information feedback is needed, manned aircraft are unavailable, or excessive risk or other conditions render use of manned aircraft less than prudent. The Outrider TUAV system consists of one Ground Control Stations (GCSs); one Remote Video Terminals (RVTs); four Air Vehicles (AVs), Modular Mission Payloads (MMPs), and launch and recovery equipment. The Ground Control Station collects, processes, analyzes, and distributes digitized battlefield information by interfacing with present and planned Service Command, Control, Communications, and Intelligence (C3I) systems. Flight and mission commands are sent to the AV(s) from the GCS. RSTA imagery and AV position data are sent by downlink directly to the GCS or RVTs located in tactical operations centers. The Outrider TUAV is transportable by one C-130, with a roll-on, roll-off capability. Mission capability will be enhanced as advanced mission payloads become available, maximizing battlefield digitization to increase the effectiveness of other weapon systems.

Air Vehicle Characteristics:

Size and Weight

Wing Span - 11.1 ft

Overall Length - 9.9 ft

Wing Area - 28.2 ft

Dry Weight - 300 lbs

Available fuel and oil - 85 lbs

Performance

Dash Speed - 110 kts

Minimum Flying Speed - 35 kts

On Station Endurance - 7.2 hours @ 50 km

- 4.9 hours @ 200 km

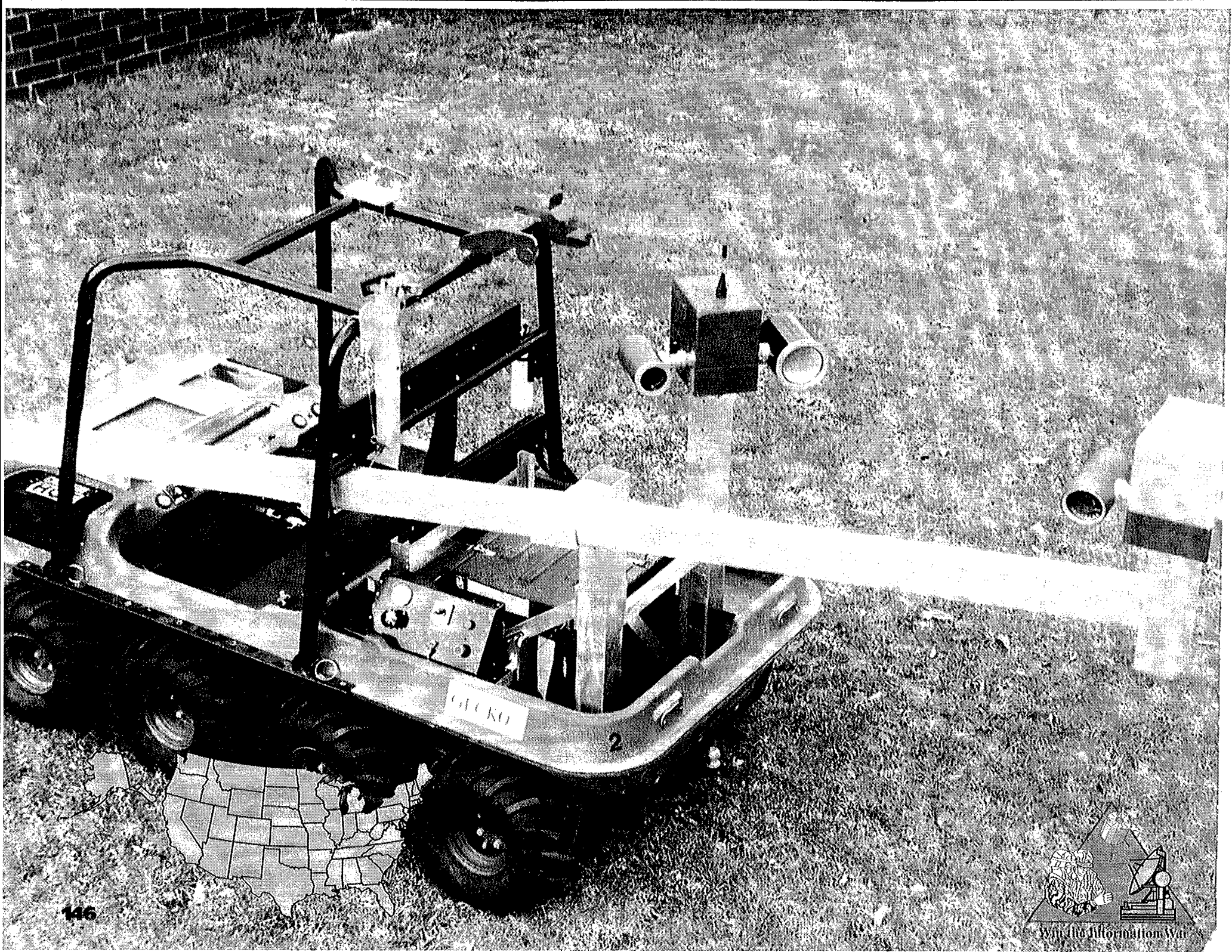
FOREIGN COUNTERPART: Israel has considerable experience with UAVs; however, requirements and specifications of the Tactical UAV make it unique.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: Contract for the TUAV Advanced Concept Technology Demonstration was awarded on 2 May 1996.

PROJECTED ACTIVITIES: The first system is expected to be delivered to the Army in May 1997.

PRIME CONTRACTOR(S): Alliant Techsystems (Hopkins,MN)



CONCEPT

MISSION: The Tactical Unmanned Vehicle (TUV) will use its unmanned Reconnaissance, Surveillance, and Target Acquisition (RSTA) capability as a force multiplier to expand the maneuver commanders' area of interest and influence.

CHARACTERISTICS: The TUV consists of a Mobile Base Unit (MBU) with a payload and an Operator Control Unit (OCU) which controls the remotely operated MBU. A data link between the MBU and the OCU will allow vehicle control and feedback and transmit RSTA information to the operator. The MBU will be able to operate at ranges 4-10 km from the operator and its RSTA capability will be able to detect vehicles 2 km from the MBU. The TUV is planned to be an organic Battalion level asset for Army and Marine Corps Infantry and Marine Corps Artillery units and will be compatible with the Common Operating Environment and Army and Marine Corps Command, Control, Communications, and Information systems.

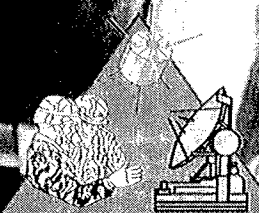
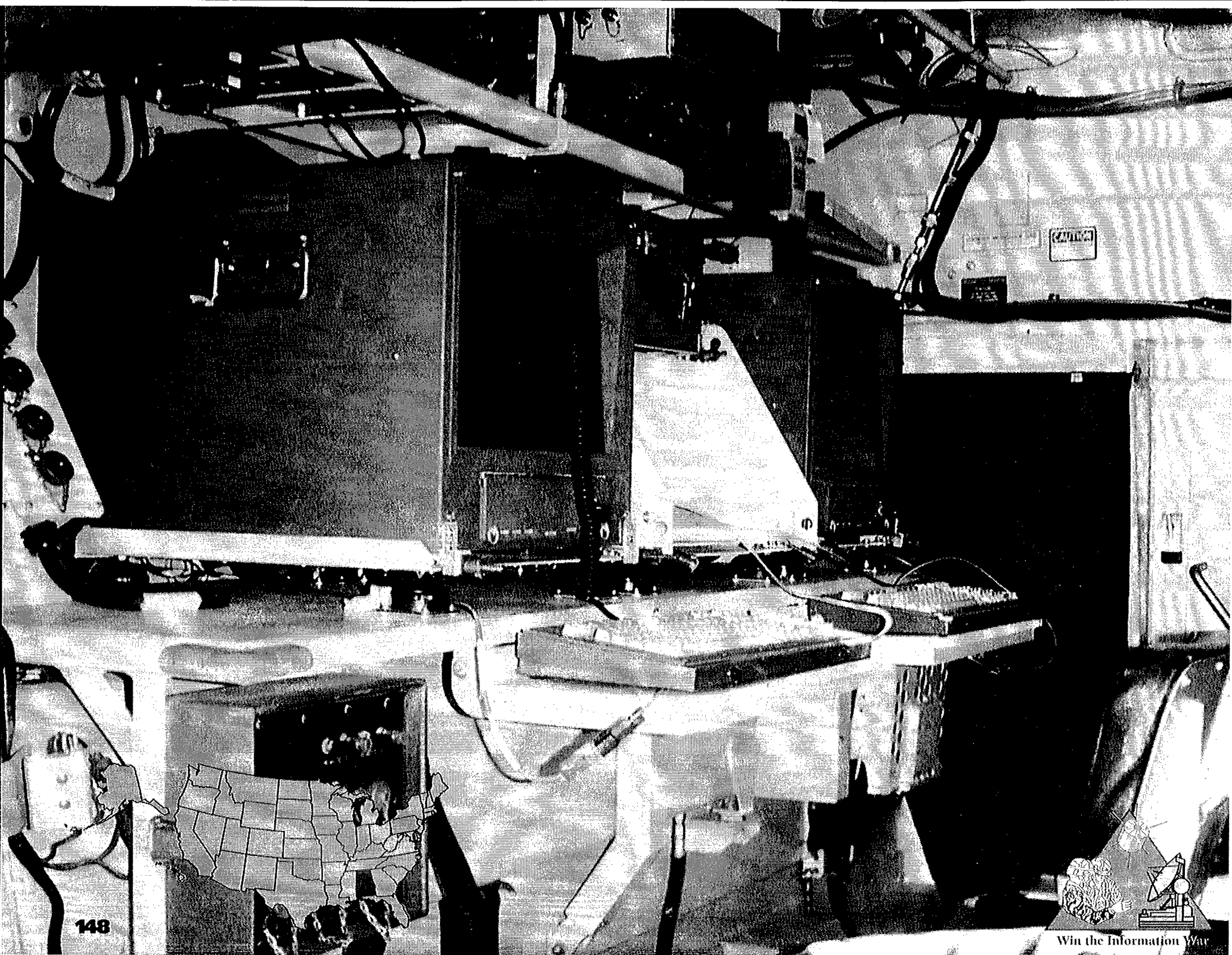
FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The TUV is currently in the Program Definition and Risk Reduction phase of development. This is an in-house government effort using existing prototype systems.

PROJECTED ACTIVITIES: User Appraisals with the 3rd Brigade, 3rd Infantry Division will begin in FY97. Milestone II is scheduled for 4QFY98.

PRIME CONTRACTOR: TBD.



PRODUCTION AND DEPLOYMENT

MISSION: The Task Force (TF) XXI Tactical Operations Centers (TOCs) provide effective, interoperable and digitized C3I facilities to the Experimental Force (EXFOR) for TF XXI Army Warfighting Experiment (AWE) in March 1997. The focus is on providing warfighters with automated TOCs that are flexible, modular, robust, reconfigurable and interoperable.

CHARACTERISTICS: The TOCs consist of Army Battle Command Systems (ABCS); FAAD C²I, ASAS, CSSCS, MCS, and AFATDS. The TOCs incorporate standard army communications, e.g., SINCGARS, and commercial products to form the Tactical Internet. The TOCs also have Appliqué that provide an interface between individual vehicles and the ABCS systems. The TOCs were designed using an Integrated Product Team consisting of PEO C3S, various TRADOC agencies and the 4th Infantry Division. Through an iterative process the designs were refined and approved by a General Officer Steering Committee headed by the Deputy Commander, TRADOC. For TF XXI Brigade, the following TOCs were built and delivered in May - Jun 96:

- 4 ID Tactical CP 1
- 1st BDE TOC
- 1st BDE Tactical Alternate Command Post (TAC)
- 1st Brigade Support Area (BSA) TOC
- 1st BN 22nd Inf TOC
- 3rd BN 66th Armor TOC
- 1st BN 5th Inf TOC
- 4th BN 42nd FA TOC
- Aviation Task Force TOC
- 299th Engineer BN TOC
- Military Intelligence CO Analysis and Control Team (MI CO ACT)

FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

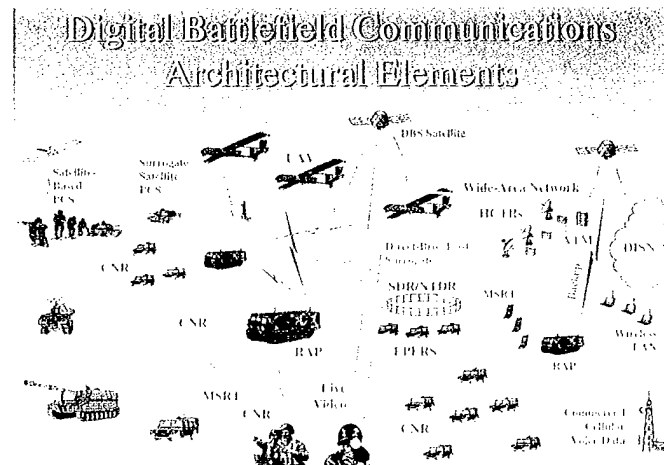
PROGRAM STATUS: As of August 1996, all TOCs were delivered to 4th Infantry Division, Fort Hood, Texas. The units have received individual training and conducted collective training in preparation for TF XXI Brigade exercise at the National Test Center in March 1997.

PROJECTED ACTIVITIES: Task Force XXI Brigade exercise - March 1997.
Task Force XXI Division exercise - Nov 1997.

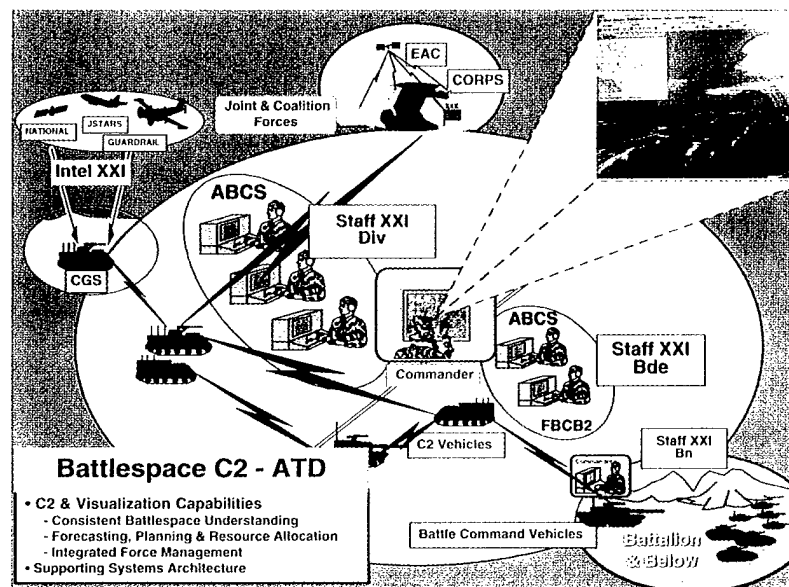
PRIME CONTRACTOR: TRW Inc. (Huntsville, AL)

Digital Battlefield Communications Advanced Technology Demonstration (ATD) (96-00):

This ATD will exploit emerging commercial communications technologies to support multimedia communications in a highly mobile dynamic battlefield environment. It will demonstrate capabilities that can supplement and in some cases replace, "legacy" military communications systems which are unable to keep pace with the rapidly increasing demand for communications bandwidth and global coverage in support of Digitized Battlefield and split-based operations. It will evolve an integrated communication infrastructure which utilizes commercial protocols and standards to achieve global interoperability. Extensive use of modeling and simulation will be employed. High throughput radio applications will be developed to solve data congestion problems. The architecture will include a Radio Access Point (RAP) to provide high bandwidth data distribution to lower echelon units-on-the-move. Network planning and communications simulation technologies that provide bandwidth control based assets, priority, environment, and reliability will be included. A mobile RAP, consisting of a high capacity trunk radio, an airborne relay, portable switch (ATM or other), and a wideband phased array antenna suited to connect forward mobile elements in split-base deployments will be prototyped and exercised by troops in the field. By FY99, this program will demonstrate adaptive internetwork control applications, and provide insertion of high throughput radio capabilities into the digital brigade, division and corps. Supports: Battlefield Digitization.



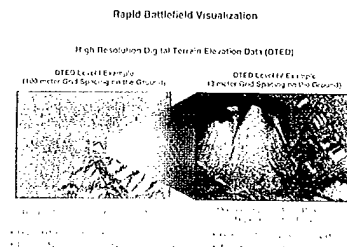
Battlespace Command and Control (BC2) Advanced Technology Demonstration (ATD):



The objective of the Battlespace Command and Control (BC2) Advanced Technology Demonstration (ATD) is to demonstrate through modeling, simulation, and experimentation with the user, the critical solutions leading to a Command and Control and Battlefield Visualization (C2/BV) prototype providing software tools and architecture supporting consistent battlespace understanding; forecasting, planning and resource allocation; and integrated force management for commander and staff. These capabilities will be integrated into the C4I systems architecture at Battalion through Division. Interoperability with Corps/Joint/Allied assets is a goal. The ATD will also explore the insertion of developed C2/BV software into Corps and Echelons above Corps. BC2 ATD will provide technology options for upgrades to applications on the Army Battle Command System,

including Maneuver Control System and Force XXI Battle Command Brigade and Below, as well as provide system and operational architectures that will reduce reaction and decision times. Support: Battlefield Digitization

Rapid Battlefield Visualization Advanced Concept Technology Demonstration (ACTD):

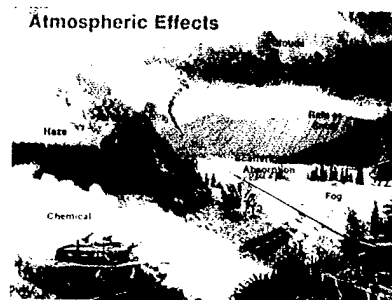


The Rapid Battlefield Visualization ACTD (RBV ACTD) will address the current inability of the Army to provide high resolution terrain databases and to integrate and demonstrate capabilities to generate, disseminate, and exploit high resolution digital terrain databases rapidly. The program will provide comprehensive visualization of the battlefield to support crisis response and force projection operations over unmapped areas. A test bed will be established with the XVIII Airborne Corps at Fort Bragg, North Carolina and will be incrementally upgraded and improved by integrating key enabling technologies in a series of Army Warfighter Exercises. An objective capability will be delivered as a leave behind in the year 2000. The ACTD will address three principle types of terrain data: digital terrain elevation data (DTED); (2) digital feature data; and (3) orthorectified imagery. The objective timelines identified by the user to collect all three terrain data types are: a 20 x 20 km area in 18 hours; 90 x 90 Km area in 72 hours; and a 300 x 300 Km area in 12 days. The approach to the ACTD is to investigate six elements which will be integrated, evaluated and demonstrated: (1) rapid access to archived data; (2) rapid collection of high resolution terrain elevation data and multi-spectral imagery using a tactically viable platform; (3) semi-automated extraction of terrain features; (4) rapid dissemination of databases over global broadcast; (5) a hierarchical spatial database management system that will accommodate multiple scales, resolutions, and dynamic updates; and (6) visualization workstations that will allow mission planning, rehearsal, course of action analysis, and embedded wargaming. The RBV ACTD is leveraging key enabling technologies from government and industry for the

above six elements.

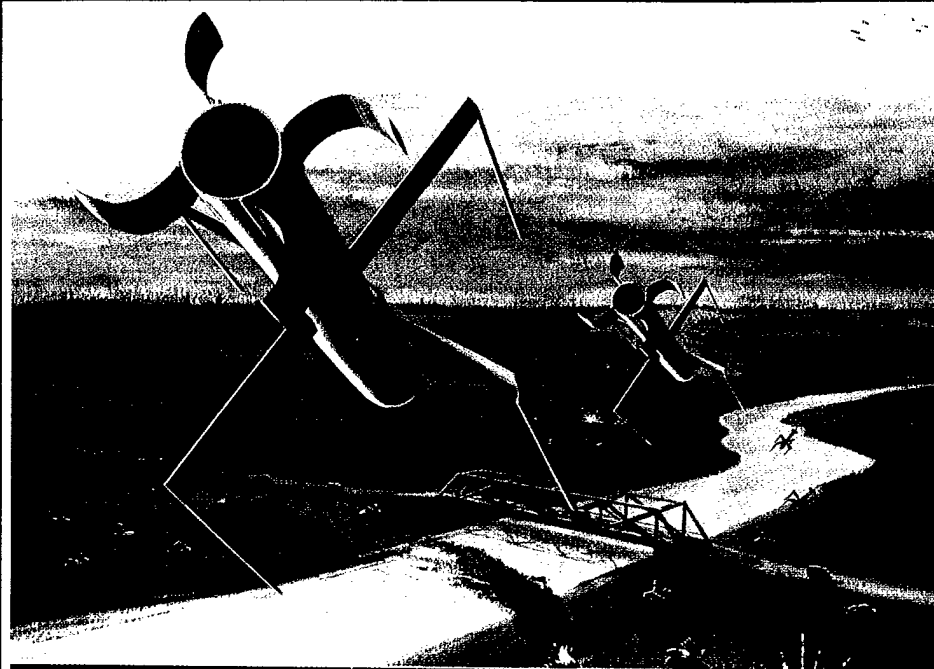
Owning the Weather (OTW):

The atmosphere affects nearly all Army systems, including the newer and more technologically advanced imagers, seekers, and munitions. Haze and fog can severely degrade target recognition and acquisition devices, and dense fog can render them useless. Precipitation is a concern for trafficability, but it also degrades optical and infrared devices and may incapacitate many radar systems. Chemical agents and obscurants disperse according to wind direction and speed, turbulence and temperature. Wind is a major factor affecting artillery accuracy, and as the range of artillery weapons increase, so do the atmospheric effects. Commanders must plan for the impact on weapon systems and optical/infrared devices in periods of adverse weather or limited visibility.



OTW is the use of advance knowledge of the environment, and its effects on friendly and enemy soldiers, equipment and weapon systems, operations, and tactics, to gain decisive advantage over opponents. It involves a four step process for knowing, predicting, and applying the weather: a) battlespace sensing and data collection; b) processing, forecasting, analysis and dissemination; c) battlefield visualization and decision aids; and d) combat weather exploitation and information operations. OTW will provide Force XXI an effective all-weather mission capability by giving the warfighter the information he needs to fight and operate smart weapons and munitions under all weather conditions. A near-all-weather operational capability can be achieved through the selection of the appropriate mix of battle sensors, weapon systems, and tactics that give friendly forces the ability to see, maneuver, fight and win in all types of weather.

OTW provides the capability to anticipate the differential impacts of weather on friendly and threat capabilities allowing commanders to exploit windows of opportunity influenced by the weather. OTW technology and information systems (e.g., Integrated Meteorological System, IMETS) can serve as a combat multiplier by providing commanders and their staffs with known and forecasted conditions and effects in the air and on the ground. These enable them to plan for conditions before a battle, helping the commander to choose the time, manner, and place of engagement. For example, in adverse weather the effectiveness of long-range precision-strike weapons with electro-optical sensors and laser-guided systems becomes severely limited. In such cases, employment of conventional systems and munitions would be more effective.



SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
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Counter Multiple Rocket Launcher ACTD

Guided Multiple Launch Rocket System (MLRS) ATD

High Mobility Artillery Rocket System (HIMARS)

Indirect Precision Fire

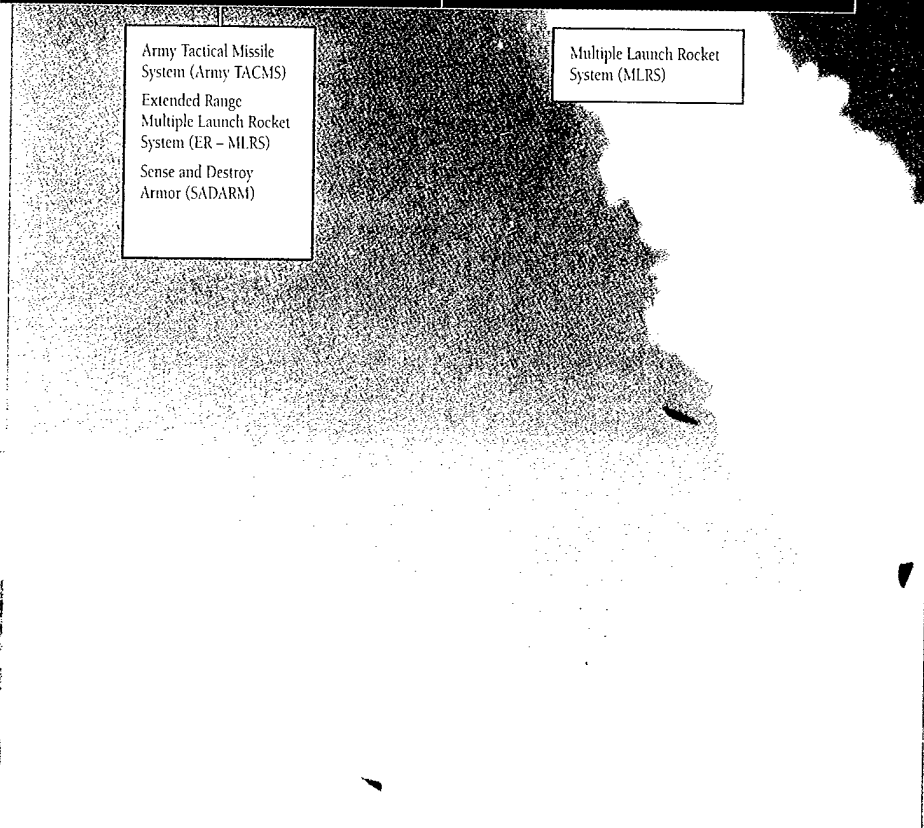
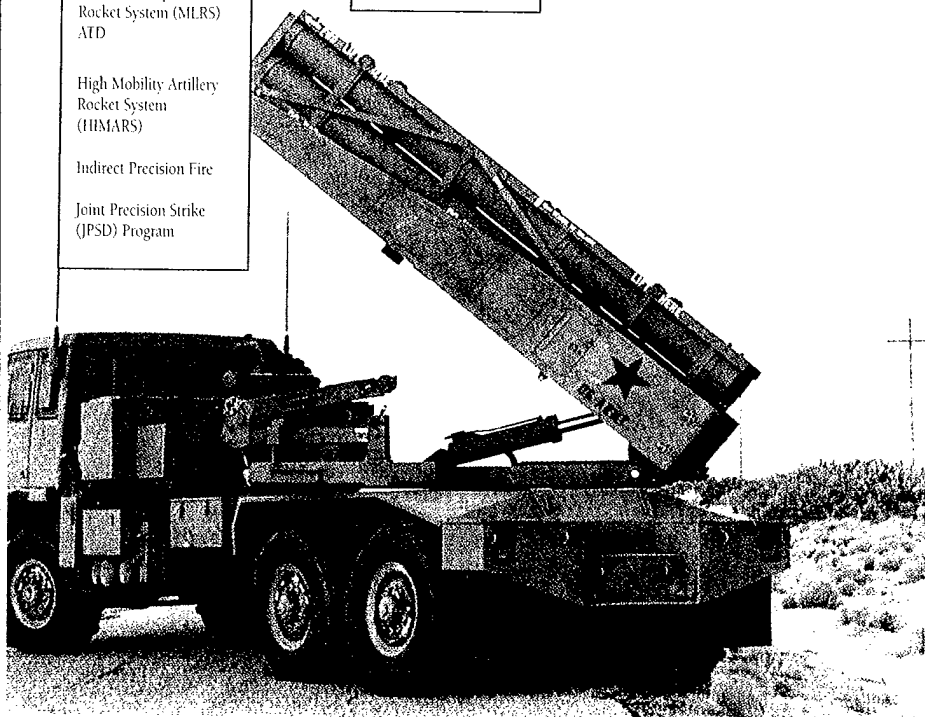
Joint Precision Strike (JPSD) Program

Tactical Endurance Synthetic Aperture Radar (TESAR)

Brilliant Anti-Armor Submunition (BAT)

Army Tactical Missile System (Army TACMS)
Extended Range Multiple Launch Rocket System (ER - MLRS)
Sense and Destroy Armor (SADARM)

Multiple Launch Rocket System (MLRS)



PRODUCTION AND DEPLOYMENT

MISSION: The Army Tactical Missile Systems (TACMS) provide long-range, surface-to-surface fire support.

CHARACTERISTICS: The Army TACMS Blocks I and IA are ground-launched missile systems consisting of a surface-to-surface guided missile with an anti-personnel/anti-materiel (APAM) warhead. The Army TACMS with APAM is used to attack soft targets at extended ranges. Its targets include surface-to-surface missile sites, air defense systems, logistics elements, and command, control, and communications complexes. Army TACMS missiles are fired from the modified M270 launcher and are capable of engaging targets at ranges well beyond the capability of existing cannons and rockets. The Army TACMS Block IA, with enhanced Global Positioning System (GPS) accuracy, has approximately twice the range of the Army TACMS.

The Army TACMS includes Guided Missile and Launching Assembly: M39; Trainer, Launch Pad Container: M68; Training Set, Guided Missile System: M165; Trainer, Test Device, Guided Missile: M78; Modified M270 Launcher; and the Army TACMS Missile Facilities.

The Army TACMS Block II is a modification of the currently fielded and combat-proven Army TACMS Block I missile family. The Block II will deliver 13 Brilliant Anti-Armor Submunitions (BAT) or BAT Preplanned Product Improvement (P3I) submunitions deep into enemy territory at supersonic velocity, where these submunitions will autonomously attack and destroy numerous high-payoff targets. The Army TACMS Block IIA is an extended range version of the Block II missile and will carry 6 BAT P3I submunitions to significantly extended ranges.

FOREIGN COUNTERPART: Blocks I/IA: Iran, Iraq, Libya, North Korea, Russia, Syria: Scud variants and SS-21; China: M-9 and M-11; France: HADES. Blocks II/IIA: No known foreign counterpart.

FOREIGN MILITARY SALES: Blocks I/IA: Turkey - Letter of Agreement for 72 missiles, 2 May 1996. Blocks II/IIA: No foreign military sales.

PROGRAM STATUS: In November 1995, a contract was awarded for 50 Block I missiles; this is the final buy for Block I. On 14 June 1996, an option for 70 Block IA Low Rate Initial Production (LRIP) missiles and 72 export version missiles (Turkey) was exercised. The current Procurement Objective for Blocks I and IA is 2,447. Army TACMS was the first weapon system to be fielded in the modernization program for a "system of systems" deep fires suite, and it saw combat action in Southwest Asia during Desert Storm effectively destroying high priority targets.

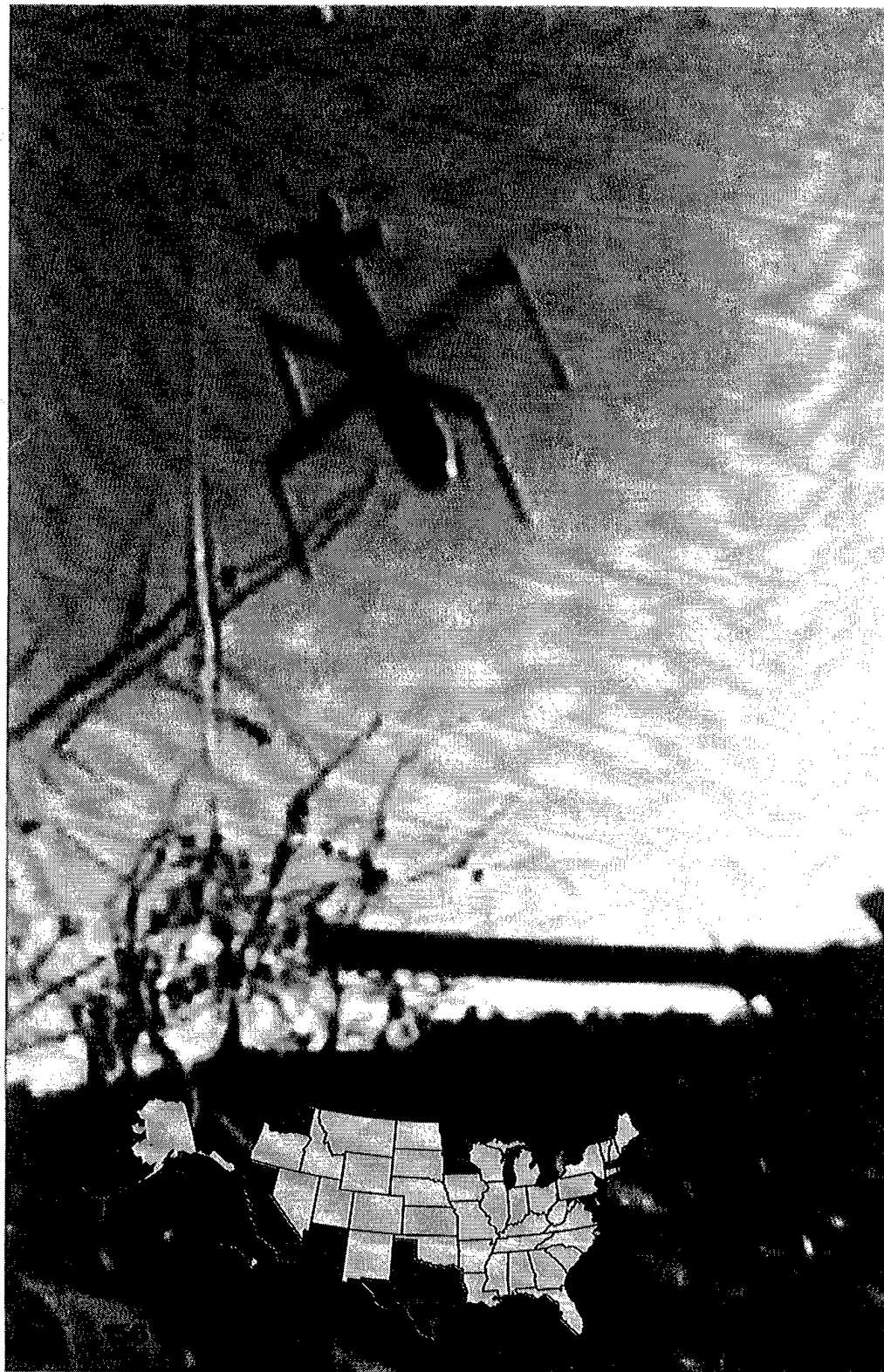
In November 1993, Army TACMS Block II was designated as the carrier for the BAT submunition. The Block II Engineering and Manufacturing Development (EMD) Program was approved in May 1995. A successful Preliminary Design Review and sled test were conducted in October, 1996. Numerous Block II/BAT integration activities are on-going, to include wind tunnel and sled tests. The Block IIA is scheduled to begin EMD in fiscal year 1999.

PROJECTED ACTIVITIES: Army TACMS Block I deliveries will be completed in FY97. Block IA will begin fielding in FY98, and retrofit of existing launchers to Army TACMS Block IA capability will occur simultaneously with missile fielding. A multi-year procurement has been authorized for Block IA in FY97; contract award is expected in 3QFY97. The Army will initiate preliminary system definition and design support efforts with the Navy for Counter Proliferation (CP) Advanced Concepts Technology Demonstration (ACTD).

Army TACMS Block II EMD will continue to include the conducting of the hardware/software Critical Design Review and the continuation of dispenser tests. First flight test for an Army TACMS Block II missile is scheduled for 4QFY97. Block II LRIP decision is currently scheduled for FY99.

PRIME CONTRACTOR: Lockheed Martin Vought Systems (Dallas, TX; Horizon City, TX; Camden, AR)

* See appendix for list of subcontractors.



Protect the Force

Conduct Precision Strike

Dominate the Maneuver Battle

MISSION: The Brilliant Anti-Armor Submunition (BAT) and the BAT Preplanned Product Improvement (P3I) will provide an autonomous anti-armor capability for the Army Tactical Missile System (Army TACMS) missile.

CHARACTERISTICS: The BAT submunition uses acoustic and infrared sensors to autonomously locate, attack, and destroy moving tanks and other armored vehicles. These sensors provide the autonomous capability that makes this submunition "brilliant." The BAT P3I adds cold, stationary targets, to include heavy multiple launch rocket systems, and surface-to-surface missile transporter erector launchers to the Basic BAT target set through seeker and warhead improvements. The BAT/BAT P3I submunitions are carried deep into enemy territory by variants of the Army TACMS missile, then dispensed to attack and destroy targets.

Length: 36 in

Diameter: 5.5 in

Weight: 44 lb

Seekers: BAT - Acoustic and infrared (IR)

BAT P3I - Acoustic, millimeter wave radar and imaging IR

Payload: Tandem-shaped warhead

Guidance: Autonomous

Delivery vehicles: Army TACMS Block II and Block IIA

FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

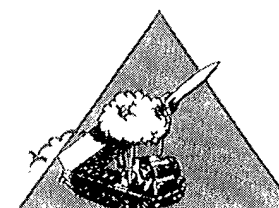
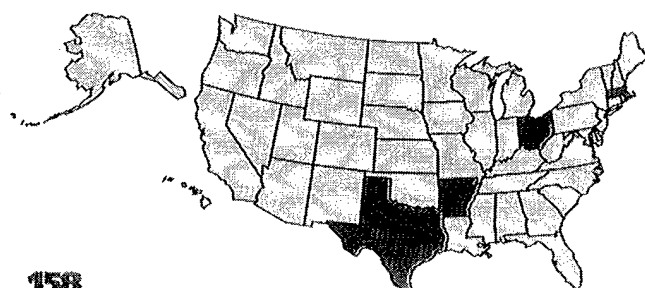
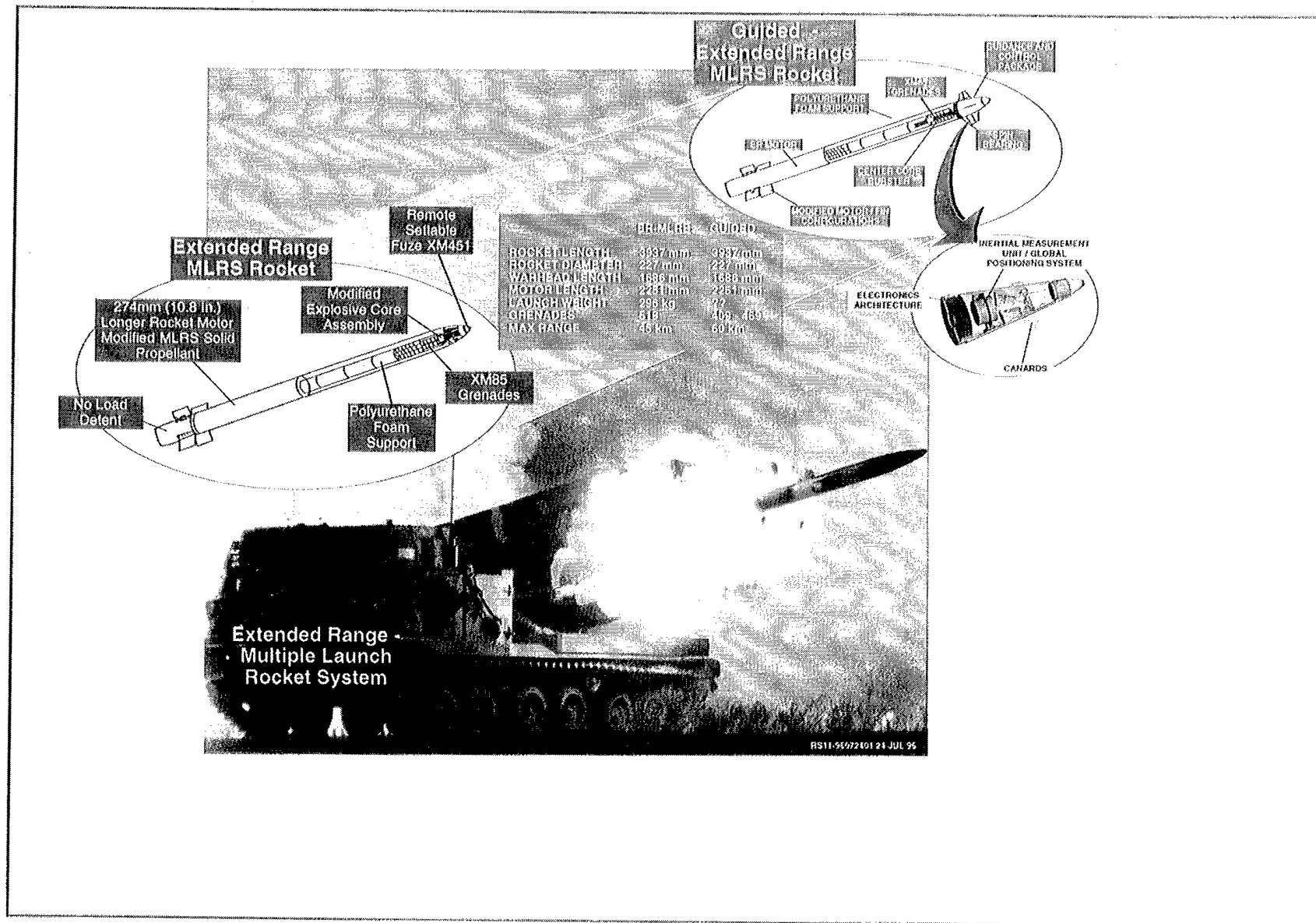
PROGRAM STATUS: BAT entered the Engineering and Manufacturing Development (EMD) phase after receiving Defense Acquisition Executive approval in June 1991. Design Verification Testing (DVT) was completed in April 1996, and Contractor Development Testing (CDT) began in July 1996. BAT P3I Program Definition and Risk Reduction (PDRR) phase began in November 1993 and is on-going. A low rate initial production decision is scheduled for 1QFY98. BAT P3I is planned to transition into EMD in fiscal year 1998.

PROJECTED ACTIVITIES: BAT - Continue EMD Program; conduct carrier integration activities and other studies; and conduct test range and target operations, maintenance, and improvement.

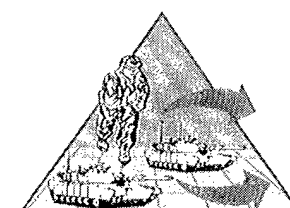
BAT P3I - Continue PDRR, conduct first captive flight test in 2QFY97.

PRIME CONTRACTOR: Northrop Grumman (Hawthorne, CA; Huntsville, AL)

* See appendix for list of subcontractors.



Conduct Precision Strike



Dominate the Maneuver Battle

SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD		OPERATIONS AND SUPPORT
				PRODUCTION AND DEPLOYMENT	

MISSION: The Extended Range Multiple Launch Rocket System (ER-MLRS) will provide longer range rockets with lower submunition hazardous dud rates for the MLRS.

CHARACTERISTICS: The ER-MLRS is the logical step in the evolution of the MLRS rocket design. It resulted from operations in Desert Storm, in which senior level commanders, while applauding the effectiveness of the basic rocket, stated a requirement for greater range. The ER-MLRS is a free-flight, area-fire, artillery rocket designed to enhance the capabilities of the MLRS. It is designed to engage targets out to 50 km. The ER-MLRS has the same diameter and length as the basic rocket but has been modified to include a lengthened motor and a smaller warhead section with fewer grenades, a new warhead section fuze and a modified center core burster. The XM85 grenade is equipped with a new self-destruct fuze designed to reduce the danger of residual duds to friendly troops. The launch pod for the ER-MLRS incorporates a new no-load detent system, which coupled with the new low-level wind measuring device on the M270 launcher, increases accuracy and effectiveness at longer ranges.

Warhead: Dual-Purpose Improved Conventional Munitions (DPICM)
 Propulsion: Solid

The Guided Multiple Launch Rocket System (G-MLRS) will be the follow-on to ER-MLRS. While retaining the majority of the ER-MLRS components, the G-MLRS will incorporate a low cost guidance and control section to increase accuracy out to a range of 60 km. The decrease in the number of grenades in the warhead will be offset by the improvement in range accuracy. G-MLRS will ensure that planned future smart munitions will be precisely delivered at extended ranges.

FOREIGN COUNTERPART: Several foreign multiple launch rocket systems have a range of 50 km or greater.

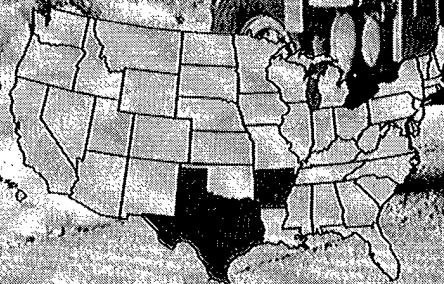
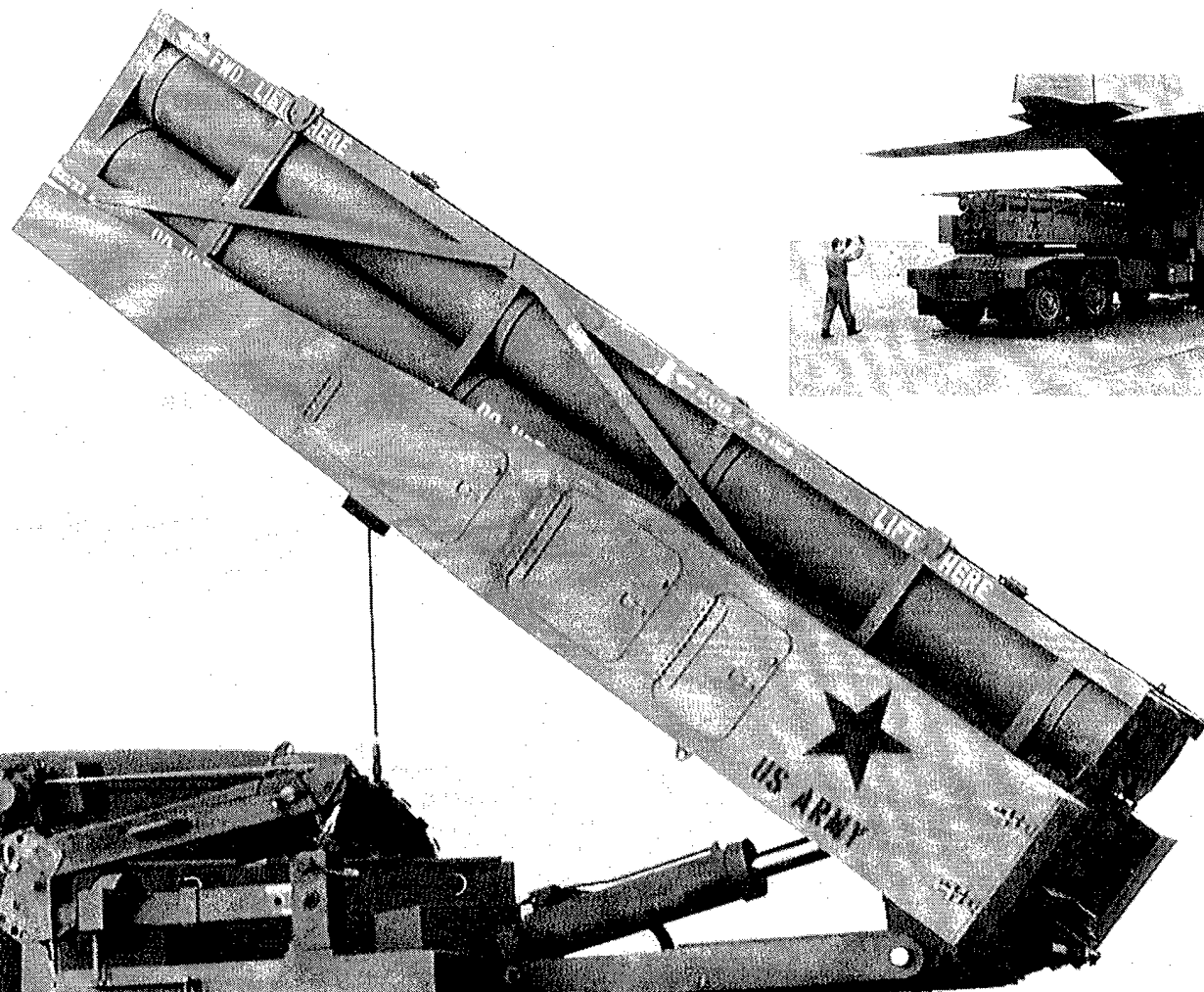
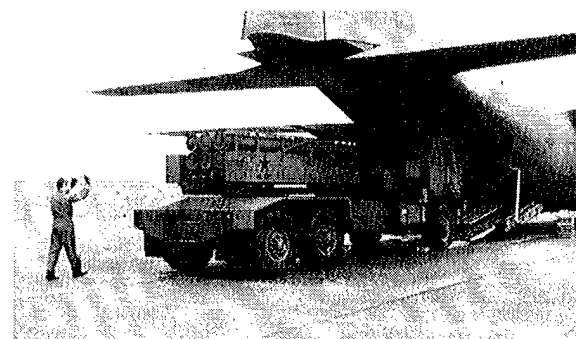
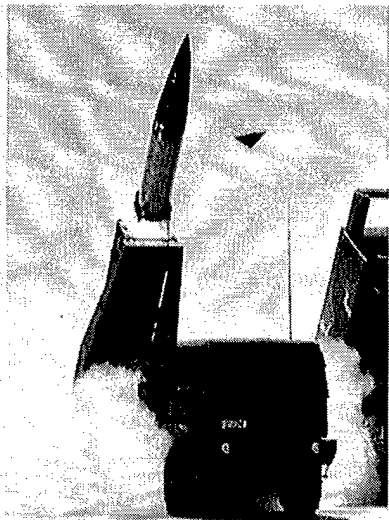
FOREIGN MILITARY SALES: Norway is committed to procure the ER-MLRS beginning in FY98. There are several other potential FMS cases, including Bahrain, Denmark, and Israel.

PROGRAM STATUS: The program entered the Engineering and Manufacturing Development (EMD) phase in November 1992. The ballistic algorithm flight test program began in August 1994 and is on schedule with no technical difficulties. Pre-Production Qualification Testing (PPQT) was completed in 2QFY96. The program received approval to enter Low Rate Initial Production (LRIP) in 3QFY96.

PROJECTED ACTIVITIES: First LRIP rockets will be delivered in 2QFY98. Production qualification testing is also scheduled for 2QFY98. The first ER-MLRS rockets will be available for fielding in 1QFY99. G-MLRS EMD will commence in FY98.

PRIME CONTRACTOR: Lockheed Martin Vought Systems (Dallas, TX; Camden, AR)

* See appendix for list of subcontractors.



	CONCEPT	DEM/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
SCIENCE AND TECHNOLOGY					

MISSION: The High Mobility Artillery Rocket System (HIMARS) provides early entry forces with a C-130 transportable launch vehicle capable of employing the entire MLRS Family of Munitions to conduct counterfire, suppression of enemy air defenses, and destruction of materiel and personnel targets across a 10 to 300 km range of engagement.

CHARACTERISTICS: HIMARS integrates MLRS launcher capabilities with the new Medium Tactical Vehicles (MTV) 5-ton tactical truck chassis to provide a rapid response wheeled MLRS launcher. The resulting launcher requires 70% fewer airlift resources to transport a battery, when compared to the M270 MLRS tracked launcher. HIMARS fires the entire suite of MLRS rockets and Army TACMS missiles and is designed to be forward compatible with future MLRS munitions. The three man HIMARS crew utilizes the on board fire control system to execute digitally passed fire missions from the vehicle's manrated cab. Mission timelines are enhanced by a GPS-based position determining system and a semi-automated ammunition reload system.

FOREIGN COUNTERPART: There are numerous wheeled multiple launch rocket systems on the international market. These systems are typically short range, low fidelity targeting system, limited lethality systems. No foreign systems offer the unique capabilities provided by combining the robust HIMARS launcher and the range and effectiveness of the MLRS munitions suite.

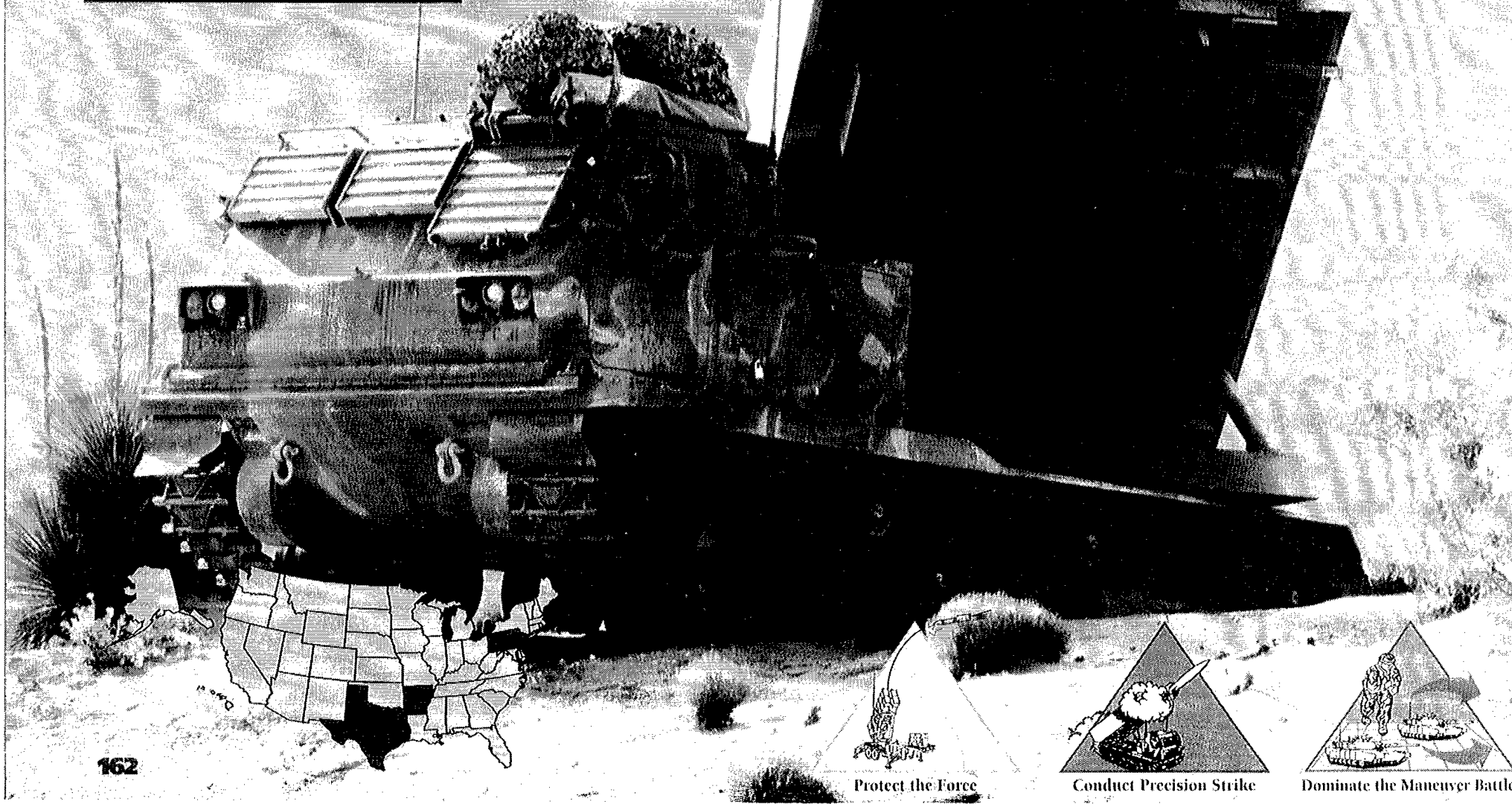
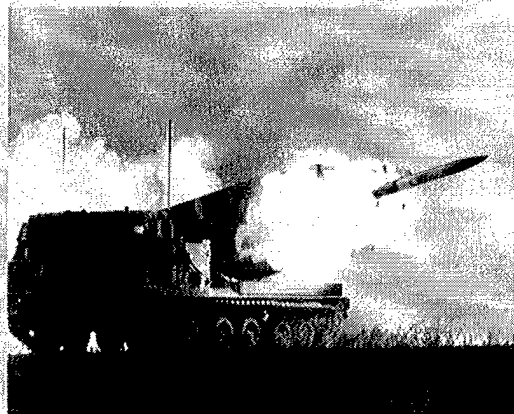
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: HIMARS full function prototypes are being fabricated as a Technology Demonstration element of the Rapid Force Projection Initiative (RFPI) Advanced Concept Technology Demonstration (ACTD). The three-launcher HIMARS platoon will serve as a standoff killer in RFPI's system of systems large scale force on force free play exercise to be conducted in August 1998. Following the exercise the equipment will remain in the field for a 24 month user evaluation.

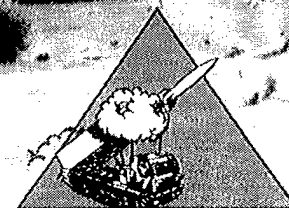
PROJECTED ACTIVITIES: FY97-98: Fabrication and testing of precision aiming platform, manrated cab and munitions reload systems.
FY98: Unit training and RFPI field exercise participation.
FY98-00: Extended field evaluation.

PRIME CONTRACTOR: Lockheed Martin Vought Systems (Dallas, TX)

* See appendix for list of subcontractors.



Protect the Force



Conduct Precision Strike



Dominate the Maneuver Battle

MISSION: The Multiple Launch Rocket System (MLRS) provides counterbattery fire and suppression of enemy air defenses, light materiel, and personnel targets.

CHARACTERISTICS: The MLRS is an artillery weapon system that supplements cannon artillery fires by delivering large volumes of firepower in a short time against critical, time-sensitive targets. The basic warhead carries improved conventional submunitions, however, the MLRS is capable of supporting and delivering all of the MLRS Family of Munitions (MFOM) including the Army Tactical Missile System (Army TACMS) weapons. Growth programs are under way to extend the range of the rocket system and to upgrade the fire control and launcher mechanical systems.

Length:	6,832 mm	Width:	2,972 mm
Weight:	24,756 kg	Range:	483 km
Average speed:	40 kph	Max speed:	56 kph
Crew:	3		

FOREIGN COUNTERPART: Similar multiple launch rocket systems exist and have a broad range of capabilities.

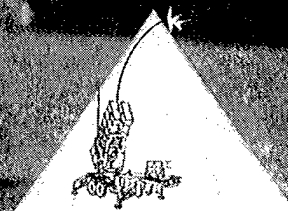
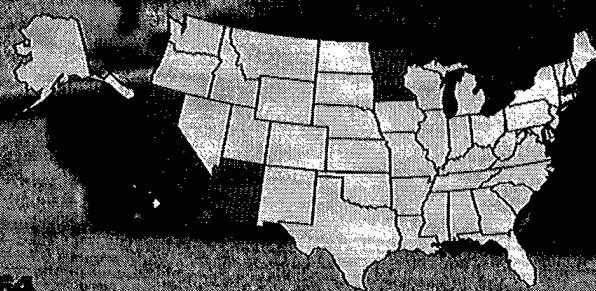
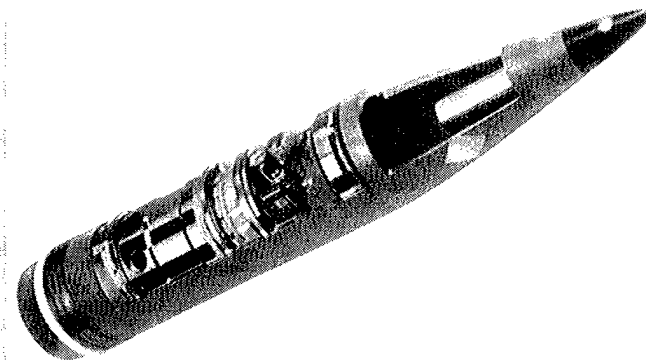
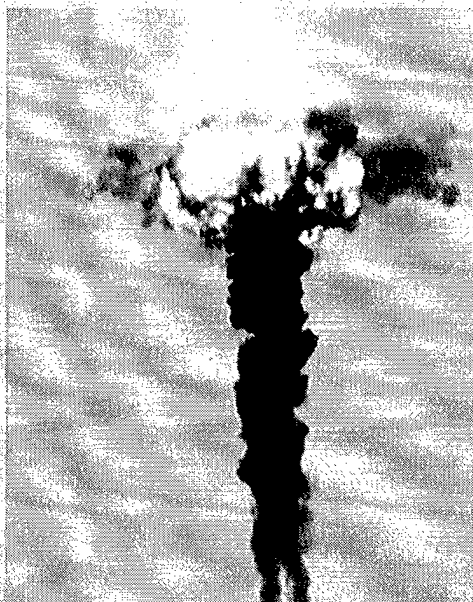
FOREIGN MILITARY SALES: Bahrain, Denmark, France, Germany, Greece, Israel, Italy, Japan, Netherlands, Norway, Turkey, United Kingdom.

PROGRAM STATUS: The U.S. initial operational capability for MLRS was achieved in 1983. Starting in FY89, MLRS has been coproduced by the United States, Germany, France, Italy and the United Kingdom. As of September 1996, a total of 857 launchers have been procured for the United States, 772 for the active Army and 185 for the National Guard. Current plans for improvement of the system include the M270A1 upgrade starting in FY98. This upgrade consists of the Improved Fire Control System (IFCS) and the Improved Launcher Mechanical System (ILMS) modifications. The IFCS will mitigate electronic obsolescence in the fire control system, accommodate the needs of the MLRS Family of Munitions (MFOM) systems under development, and provide growth for future weapon systems. The ILMS will provide rapid responses to time-sensitive targets by reducing the aiming time by 70% and reducing the reload time by 50%. The Extended Range Rocket (ER-MLRS) will extend the current range of the basic rocket from 31.8 km to a new range of approximately 50 km. The IFCS and the ILMS are in the Engineering and Manufacturing Development Phase.

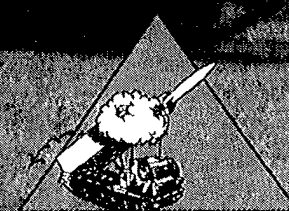
PROJECTED ACTIVITIES: M270A1 operational testing - 2QFY99.
M270A1 first unit equipped - 4QFY00.

PRIME CONTRACTOR: Lockheed Martin Vought Systems (Dallas, TX; Camden, AR)

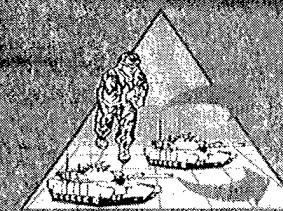
* See appendix for list of subcontractors.



Protect the Force



Conduct Precision Strike



Dominate the Maneuver Battle

SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD		OPERATIONS AND SUPPORT
				PRODUCTION AND DEPLOYMENT	

MISSION: Sense and Destroy Armor (SADARM) will provide an autonomous, counterbattery capability to indirect fire units.

CHARACTERISTICS: SADARM is a fire-and-forget, multi-sensor, smart munition designed to detect and destroy counter-measured armored vehicles, primarily self-propelled artillery. It is effective in all weather and terrain. SADARM is delivered to the target area by 155 mm artillery projectiles. Each projectile carries two SADARM highly sophisticated submunitions. Once dispensed from its carrier, the intelligent submunition detects appropriate targets using dual-mode millimeter wave and infrared sensors. Because of the multimode sensor suite, the submunition is equally effective against desert background and winter snow. It fires a highly lethal explosively formed penetrator through the top of the target. SADARM is a gun-hardened submunition with the capability to be dispensed from a variety of carriers.

Caliber: 5.8 in
Weight: 26.2 lb
Range: 22.5 km (From M109A6 howitzer)
Number of submunitions: 2/rd

FOREIGN COUNTERPART: No known foreign counterpart.

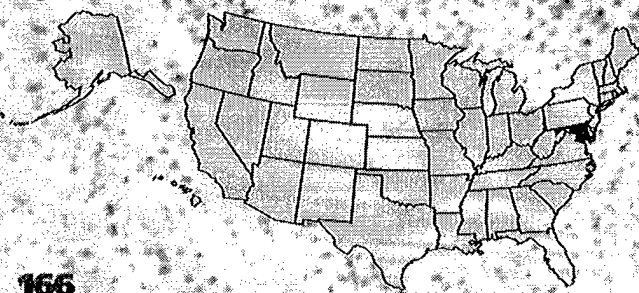
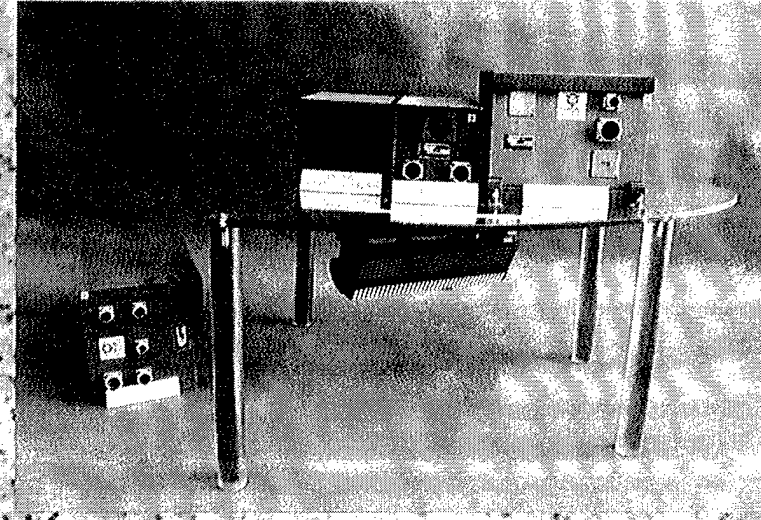
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: SADARM successfully completed the Engineering and Manufacturing Development phase in April 1996, and entered low-rate production in August 1996. A performance enhancing product improvement program was initiated in October 1996.

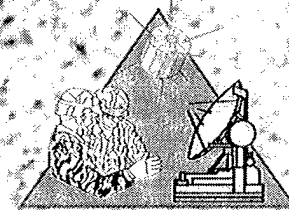
PROJECTED ACTIVITIES: Full rate production will begin in 1999.

PRIME CONTRACTOR: GENCORP Inc. (Aerojet) (Azusa, CA)

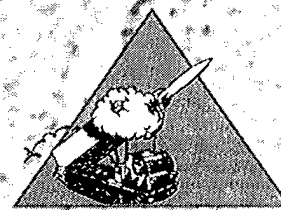
* See appendix for list of subcontractors.



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Win the Information War



Conduct Precision Strike

SCIENCE AND TECHNOLOGY		DEM/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
	CONCEPT				

MISSION: The Tactical Endurance Synthetic Aperture Radar (TESAR) provides the medium altitude endurance unmanned aerial vehicle (MAE UAV) with continuous all weather coverage of worldwide targets for long endurance missions at significant operational ranges. High quality, one foot resolution imagery is downlinked, analyzed and distributed to the appropriate user. The Synthetic Aperture Radar Target Recognition and Location System (STARLOS) provides for the integration of sensor, signal processing and operational concepts. Utilizing new and emerging systems, it demonstrates reduced sensor to shooter timelines and enhanced identification against mobile, time-critical ground targets at deep and extended ranges.

CHARACTERISTICS: The TESAR is a key development by the Army for the OSD sponsored MAE UAV Advanced Concept Technology Development (ACTD) program. This ACTD quickly satisfied the military need of long dwell coverage and reconnaissance of small, mobile or fixed targets and to develop concepts of operation for endurance UAVs. The TESAR sensor is a light-weight (165 lb) high resolution (1 ft) payload that performs image formation processing in the air; and downlinks continuous high quality strip map imagery that is normally 800 m wide. Collected data is stored in the ground station, and selected images are disseminated via satellite link to various intelligence nodes. An additional moving target indicator (MTI) mode is being developed and will be on the MAE UAV. The TESAR output will be interfaced to STARLOS equipment to demonstrate the significant value-added identification capability of automatic target cueing/recognition of high priority ground targets at deep and extended ranges.

STARLOS is an advanced technology demonstration of the feasibility of locating and identifying high value targets from an aerial platform such as an unmanned aerial vehicle. STARLOS is meant to operate on an Army designated aerial platform. Targets are identified and located by means of a high resolution synthetic aperture radar (SAR) sensor coupled with very high speed signal processors to perform rapid automatic target recognition or automatic target cueing. The program has become a major component of the Joint Precision Strike Demonstration Program (JPSD), and was the impetus for the development by industry of a high resolution SAR payload for the JCS medium altitude endurance class of unmanned aerial vehicles. The system is designed to support operational commanders in world-wide contingency operations, and supports the direct, real-time sensor-to-shooter architecture, DoD deep precision strike, and battlefield visualization concepts.

FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: TESAR: Currently deployed 3 SAR payloads, 1 ground control station and spares to Operation Joint Endeavor; balance of ACTD SARs being integrated on MAE UAV aircraft.

PROJECTED ACTIVITIES: TESAR: Transition of ACTD program into Acquisition Cycle.
STARLOS: Transition processor to industry. Deliver and leave behind for the JPSD sponsored Counter Multiple Rocket Launcher ACTD.

PRIME CONTRACTOR: TESAR: Northrup Grumman (Baltimore, MD)
STARLOS: TBD

**The Joint Precision Strike
Demonstration (JPSD)
Program:**

The Joint Precision Strike Demonstration (JPSD) Program is developing and demonstrating an all-weather, day/night, end-to-end, sensor-to-shooter precision strike capability to defeat critical targets at extended ranges. Initiated in FY92 as part of the Office of the Secretary of Defense's Precision Strike Thrust II, the program's early focus had been centered on Army programs, but has expanded into a Joint environment. Although the program originally derived from the difficulties in locating and destroying Scuds during DESERT STORM, JPSD is presently exploring and demonstrating ways to counter any high value, time critical target, especially those at extended ranges.

To optimize the Land Component Commander's precision strike capabilities, the program has four strategic objectives. The first is to identify and establish a timeline for the Army's current precision strike baseline. The second is to reduce precision strike timelines from the current capability, measured in hours, to a future capability, measured in minutes. The third is to achieve a measurable improvement in target location and identification, weapons effectiveness and damage assessment. The final objective is to advance precision strike concepts of employment including real-time sensor to weapon cueing, near-real-time data dissemination of seamless sensor-to shooter node communications, and dynamic re-targeting.

To support JPSD's building block demonstrations in a realistic and doctrinally correct environment and to provide a mechanism to collect, organize, analyze and display data, a JPSD Integration and Evaluation Center (IEC) has been developed at the U.S. Army Topographic Engineering Center (TEC), Alexandria, VA. The IEC has an extensive set of connectivities, both classified and unclassified, to allow the integration of live inputs, simulations, prerecorded data and scripted events. The IEC has already proven itself to be an extremely useful capability to a variety of users (system developers, trainers and warfighters).

JPSD's accomplishments to date include: First Light and Rapid Strike Demonstration conducted early in the program; beyond Line-of-Sight Unmanned Aerial Vehicle (UAV) demonstration in Nov. 93; the FY94 surface-to-surface demonstration which highlighted the U.S. Army's Extended Range Army Tactical Missile System (ER ATACMS) in precision strike missions against time-critical, deep targets and the FY95 - 98 Precision/Rapid Counter 240mm MRL (P/RC-MRL) Advanced Concept Technology Demonstration (ACTD). This ACTD included demonstrations with large numbers of troops (including support from the sister services) connecting multiple facilities within the continental U.S. and in Korea. The JPSD demonstrations bring together as a team the warfighter, the scientist and the engineer providing them experience of hands-on utilization of new technologies and concepts and assessment of the impact of new capabilities on doctrine.

JPSD is planning a follow-on effort to the P/RC-MRL to address remaining shortfalls in the CINC's precision strike capabilities. Also the Rapid Battlefield Visualization (RBV) ACTD will demonstrate rapid generation of high resolution digital terrain data, combined with situation awareness information and embedded wargaming, and rapidly disseminated to provide commanders with a view of the battlespace.

**Guided Multiple Launch
Rocket System (MLRS)
Advanced Technology
Demonstration (ATD)
(94-98):**

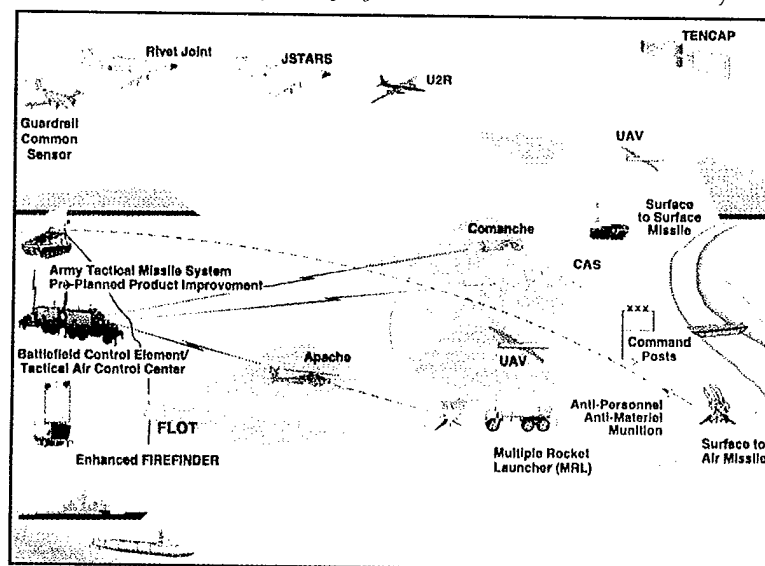
The Guided MLRS ATD will design, develop and flight test a low-cost guidance and control system for the extended-range MLRS free-flight rocket, thereby substantially improving its delivery accuracy, reducing the number of rockets required to defeat the target, reducing the logistics burden and expanding the set of MLRS targets to include precision targets. The guidance system will make use of inertial and global positioning system low-cost component technologies and will have application for bomblet, precision guided submunition, mine and unitary/earth penetrator warheads. The Guided MLRS ATD is being simulated as an advanced concept in the Rapid Force Projection Initiative ACTD and the Joint Precision Strike Demonstration Precision/Rapid Counter Multiple Rocket Launcher ACTD, as well as the mobile strike force advanced warfighting experiment. The Guided MLRS technology is scheduled to begin Engineering and Manufacturing Development (EMD) in FY98.

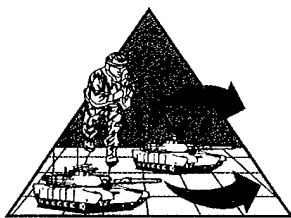
Indirect Precision Fire Advanced Technology Demonstration (ATD):

The goal of the Indirect Precision Fire ATD is to demonstrate an order of magnitude accuracy improvement in an affordable, modular guidance package, compatible with a NATO standard fuze well for existing and future artillery projectiles. To do so, the ATD will develop an auto-registration and a guided competent munition. The auto-registration concept utilizes GPS technology integrated with a ballistic computer on the platform to generate automated firing corrections. The guided competent munition concept utilizes gun-hardened GPS/INS guidance and a canard control system. The guided competent munition effort leverages a substantial Navy investment.

Counter-Multiple Rocket Launcher (C-MRL) Advanced Concept Technology Demonstration (ACTD):

During a conversation with the Deputy Assistant Secretary of the Army (Research and Technology) in the Fall of 1993, the Commander-in-Chief, United Nations Command/Combined Forces Command/United States Forces Korea (CINC UNC/CFC/USFK) said he could use help in defeating the North Korean 240mm Multiple Rocket Launcher (MRL) threat. Subsequently the Joint Precision Strike Demonstration Project Office (JPSDPO) began a planning and staffing effort that resulted in the Deputy Under Secretary of Defense for Advanced Technology approving the Precision/Rapid Counter MRL Advanced Concept Technology Demonstration (C-MRL ACTD) in December 1994. The C-MRL ACTD, the first OSD approved ACTD, spans FY95 through FY98. It leverages current capabilities and integrates emerging technologies to provide the CINC a significantly enhanced capability to defeat the 240mm MRLs near the Korean Demilitarized Zone. To accomplish this task JPSDPO has developed a number of enhanced capabilities and new operational concepts, and has conducted a large distributed exercise in September and October 1995 to demonstrate and evaluate the capabilities and concepts. The exercise included activity at numerous locations: Army III Corps elements at Fort Hood, TX; III Corps Artillery elements and the Depth and Simultaneous Attack Battle Lab at Fort Sill, OK; III Corps Aviation elements and the Aviation Battle Lab Support Group at Fort Rucker, AL; Air Force and Navy simulation centers in the Washington, D.C. area; and JPSD's Integration and Evaluation Center in Alexandria, VA. JPSDPO will conduct a second and final exercise in Korea in September and October 1996 to demonstrate refined operational concepts and more advanced capabilities. It will be a large, joint exercise involving: the USFK staff; the 2nd Infantry Division; 7th Air Force; Arizona Air National Guard; 7th Fleet; the Air Force's Theater Battle Arena simulation center in the Pentagon; and several Navy simulation centers along the East Coast. Enhanced capabilities will be "left behind" in Korea following the exercise as decided by USFK. JPSDPO will provide maintenance and training support for the "leave behinds" through FY98, after which time support responsibility transitions to the Theater, system project offices and Service commodity commands.



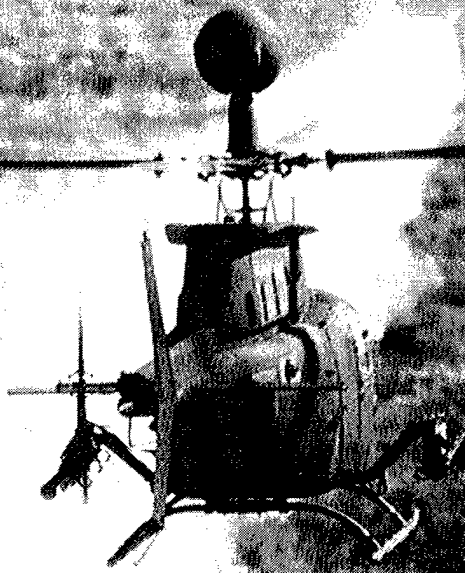


Tomorrow's Army will be a smaller force, but with just as many, if not more, crises to respond to on behalf of the nation. As a result, Army forces will need improved firepower, improved mobility and greater situational awareness if they are to maintain their effectiveness. The Army of the future must be able to dominate the maneuver battlefield, despite and because of its smaller size. The smaller size means the Army of the future will have less margin for error and so must maximize the combat power of each soldier. The Army must pursue weapon systems with greater ranges, greater accuracy and greater firepower. The Army must also acquire systems that will extend the all-weather/night fighting capabilities of its forces.

Army modernization efforts to Dominate the Maneuver Battle fall into two categories: upgrades and new systems. The first category covers Army programs to greatly enhance the capabilities of its existing systems. The upgrades to the Abrams tank and the Bradley Fighting Vehicle System (BFVS) will improve the communications and data processing systems, the night-fighting capabilities and the survivability of the vehicles. The Driver's Vision Enhancer (DVE) and the 2nd Generation Forward Looking Infrared (2nd Gen FLIR) are two examples of these upgrades. The Apache Longbow program will vastly improve the ability the Apache attack helicopter to track and engage a large number of air and ground targets. The Apache will also add the 2nd Gen FLIR. Digitization upgrades to all platforms will allow them to operate more efficiently as part of an integrated whole.

The Army is also acquiring several new systems that will greatly improve the ability of its forces to prosecute a ground war. The Crusader is a revolutionary artillery system, using a Regenerative Liquid Propellant Gun and an automated loading system. Crusader also requires 3 fewer crewmen than previous self-propelled artillery systems. The new Command and Control Vehicle (C2V) will allow C2 "on the move" from an armored vehicle that can keep pace with Bradley and Abrams. To improve its mobility, the Army is also enhancing its combat engineering capabilities with the acquisition of the Grizzly breaching vehicle and the Wolverine heavy assault bridge vehicle.

This combination of improved firepower, improved mobility and improved situational awareness will make tomorrow's Army maneuver forces a very powerful tool. By maintaining a tremendous technological advantage over potential adversaries, the Army will retain its ability to Dominate the Maneuver Battle and will continue to be a strong deterrent to would be aggressors.



SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
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Direct Fire Capability
Enhanced Fiber Optic Guided Missile (EFOGM) AID
Hunter Sensor Suite AID
Line of Sight Anti-tank (LOSAT)
Military Operations in Urban Terrain
Multifunction Staring Sensor Suite AID
National Automotive Center
National Rotocraft Technology Center (NRTC)
Objective Individual Combat Weapon AID
Rapid Force Projection Initiative (RFPI) AID
Rotocraft Pilot's Associate (RPA) AID Program
Scout Vehicle
Target Acquisition AID

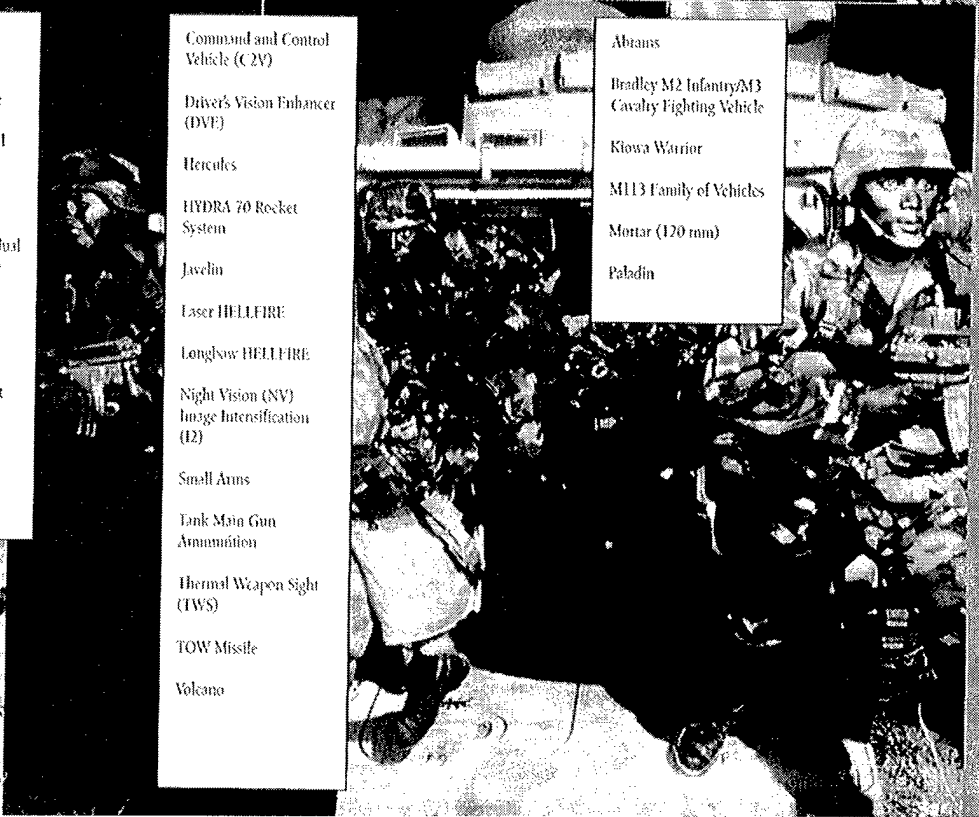
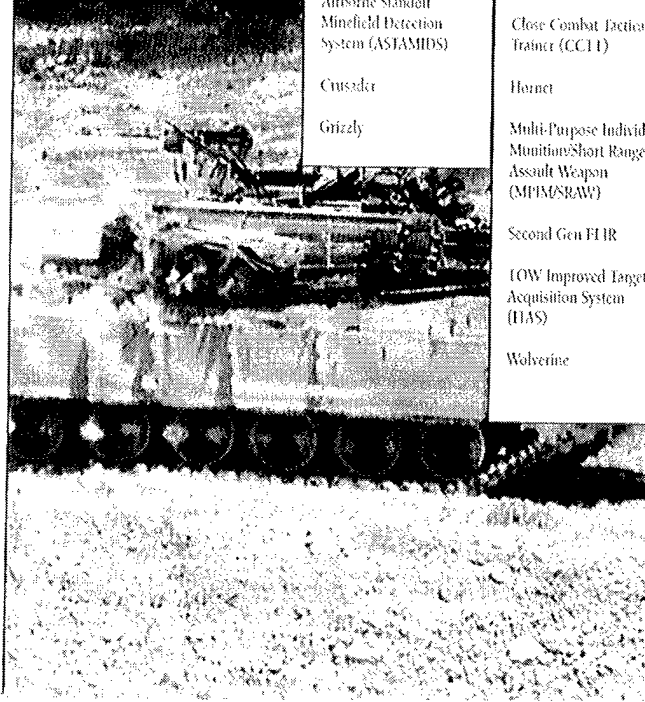
Vehicle Teleoperation Capability (VIC)

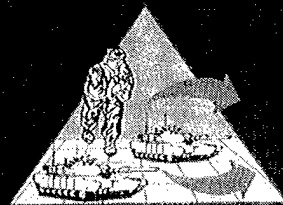
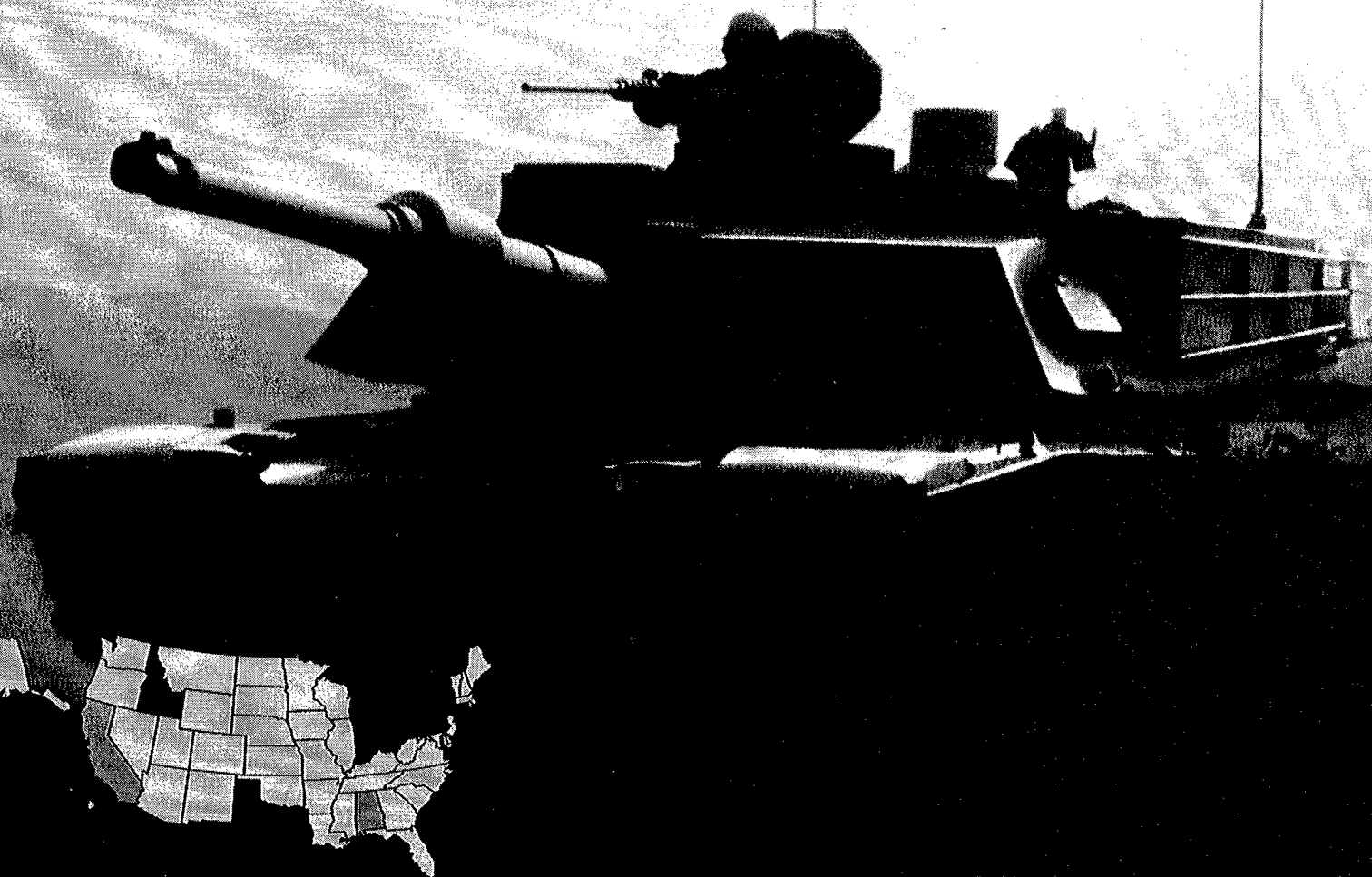
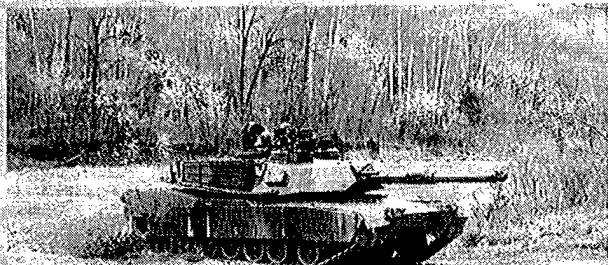
Advanced Tank Automatic System (ATAS)
Airborne Standoff Minefield Detection System (ASTAMIDS)
Crusader
Grizzly

Apache Longbow
Bradley Fire Support Team (BFST) Vehicle
Close-Combat Tactical Trainer (CC11)
Hornet
Multi-Purpose Individual Munition/Short Range Assault Weapon (MPIM/SRAW)
Second Gen FHIR
TOW Improved Target Acquisition System (TIAS)
Wolverine

Command and Control Vehicle (C2V)
Driver's Vision Enhancer (DVE)
Hercules
HYDRA 70 Rocket System
Javelin
Laser HELLFIRE
Longbow HELLFIRE
Night Vision (NV)
Image Intensification (IIS)
Small Arms
Tank Main Gun Ammunition
Thermal Weapon Sight (TWS)
TOW Missile
Volcano

Abraams
Bradley M2 Infantry/M3 Cavalry Fighting Vehicle
Kiowa Warrior
M113 Family of Vehicles
Mortar (120 mm)
Paladin





Dominate the Maneuver Battle

MISSION: The Abrams tank provides heavy armor superiority on the battlefield.

CHARACTERISTICS: The Abrams tank closes with and destroys enemy forces on the integrated battlefield using mobility, firepower, and shock effect. The 105 mm main gun on the M1 and IPM1 and the 120 mm main gun on the M1A1 and M1A2, combined with the powerful 1,500 hp turbine engine and special armor, make the Abrams tank particularly suitable for attacking or defending against large concentrations of heavy armor forces on a highly lethal battlefield. Additional features of the M1A1 are increased armor protection, suspension improvements, and an NBC protection system that provides additional survivability in a contaminated environment. The M1A2 program builds on the M1A1 to provide an Abrams tank with the necessary improvements in lethality, survivability, and fightability required to defeat advanced threats. The M1A2 includes a Commander's Independent Thermal Viewer, an Improved Commander's Weapon Station, position navigation equipment, a distributed data and power architecture, embedded diagnostic system, improved fire control system, and a radio interface unit that allows, through the SINCGARS radio, rapid transfer of digital situational data and overlays to compatible systems on the digital battlefield.

	M1/IPM1	M1A1	M1A2
Length:	32.04 ft	32.25 ft	32.25 ft
Width:	12.0 ft	12.0 ft	12.0 ft
Height:	7.79 ft	8.0 ft	8.0 ft
Top speed:	45.0/41.5 mph	41.5 mph	41.5 mph
Weight:	61.4/62.8 tons	67.6 tons	68.4 tons
Armament:	105 mm	120 mm	120 mm
Crew:	4	4	4

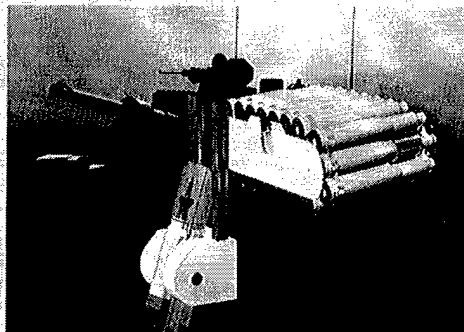
FOREIGN COUNTERPART:	France: LeClerc Italy: C1 Ariete	Germany: Leopard 2 Russia: T-64, T-72, and T-80	Israel: Merkava Mk. 3 United Kingdom: Challenger 2
FOREIGN MILITARY SALES:	Egypt - 555 M1A1 Kits	Kuwait - 218 M1A2s	Saudia Arabia - 315 M1A2s

PROGRAM STATUS: Production of new Abrams for the U.S. Army and current Foreign Military Sales cases is complete (except for M1A1 tanks kits for Egypt). In lieu of new production, the Army is upgrading approximately 1,000 older M1 tanks to the M1A2 configuration. A multiyear procurement for 600 M1A2 upgrades was awarded in July 96. Further M1A2 improvements, called the System Enhancement Program, (SEP), are underway to enhance the tanks digital command and control capabilities and to add second generation forward looking infrared sensors to the thermal sights to improve the tank's fightability and lethality.

PROJECTED ACTIVITIES: The initial M1A2 fielding to the First Cavalry Division, Ft. Hood, TX is underway with completion scheduled for 2QFY98. The first M1A2 SEP tanks are scheduled to begin fielding in 3QFY00.

PRIME CONTRACTOR: Allison Transmission (Indianapolis, IN)
General Dynamics (Land Systems Division) (Sterling Heights, MI; Warren, MI; Lima, OH;)
LITCO (Idaho Falls, ID)
Texas Instruments (Dallas, TX)

* See appendix for list of subcontractors.

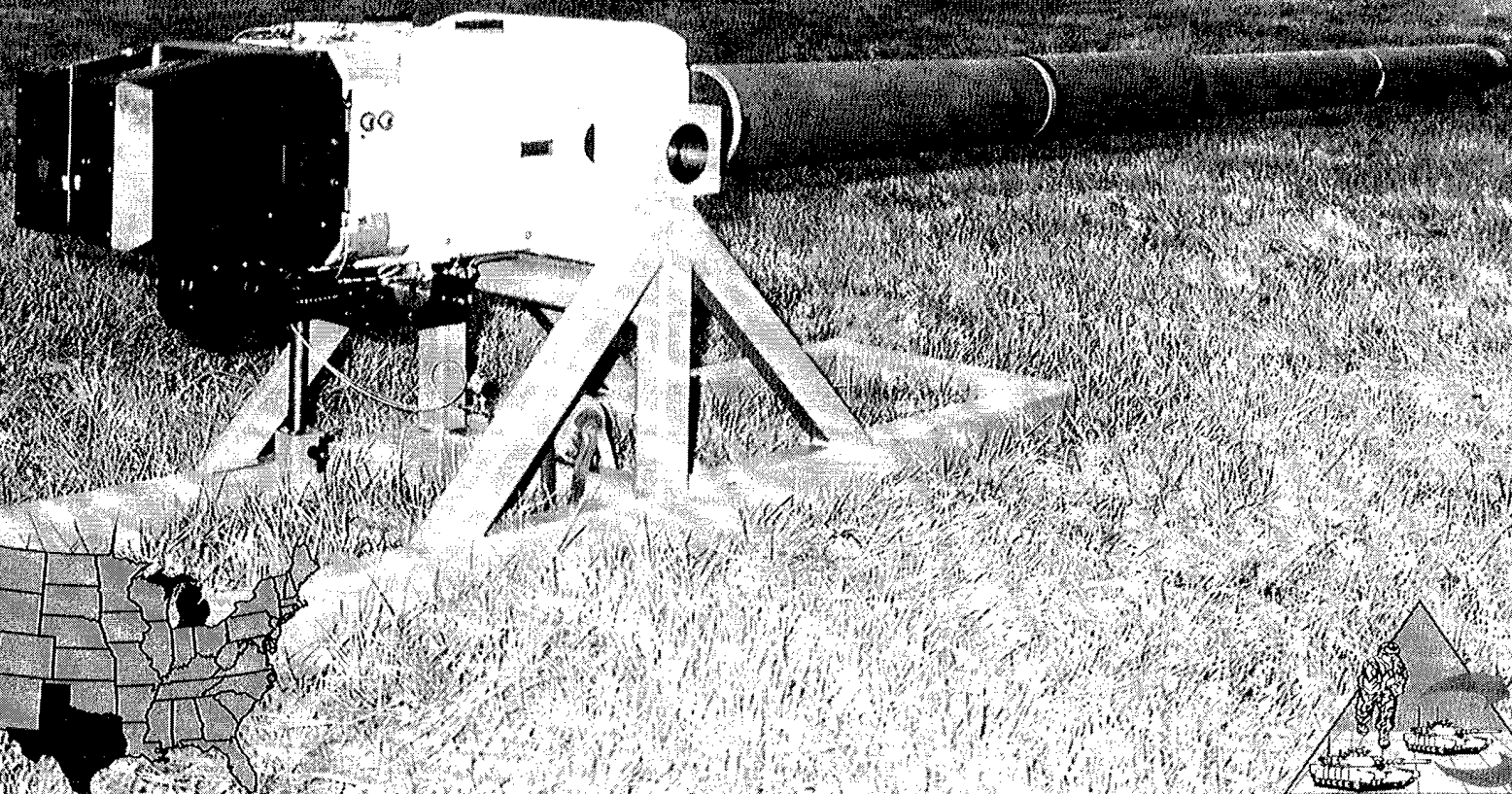


**COMPACT AUTOLOADER
TECHNOLOGY
DEMONSTRATOR**



DA PATENT
DEMONSTRATOR

- 31 ROUNDS AUTOMATICALLY ACCESSIBLE
- 12 SHOTS PER MINUTE FIRING RATE
- INTER-ROUND FRATRICIDE PROTECTED
- NO INCUSSION INTO USABLE TURRET VOLUME



MISSION: The Advanced Tank Armament System (ATAS) Program provides next generation armament system technologies for application to the M1 Abrams production main battle tank. These technologies are designed to increase the lethality and accuracy of the Abrams tank system at extended ranges while also reducing target engagement times. They allow the tank crew to engage enemy targets further, faster and more accurately than currently fielded systems.

CHARACTERISTICS: ATAS provides three main improvements to the Abrams tank - a long barrel, 120 mm XM291 cannon, a compact 120 mm autoloader, and extended range fire control system improvements. The long barrel XM291 cannon gives all current Abrams tank ammunition the ability to kill enemy targets one kilometer further out in range than is currently possible. This is due to the higher muzzle velocity generated by the XM291 gun at shot exit. This translates into greater penetration, range and killing power for the tank. The magazine of the compact 120 mm automatic ammunition loader (autoloader) fits into the existing Abrams tank bustle ammunition storage area, operates at a sustained 12 rounds per minute firing rate, and provides inter-round fratricide protection. Automatic target detection and tracking software decrease the time necessary for the tank crew to acquire and engage enemy targets. Tank firing accuracy is greatly enhanced by the addition of a continuous muzzle reference system, advanced fire control solutions, state of the art lead predictors and improved gun servos and actuators. Together, these improvements allow the tank crew to quickly and accurately kill enemy targets at extended ranges.

FOREIGN COUNTERPART: Several countries in the world include ATAS components in their tank fleets. The French LeClerc has a long barrel 120 mm cannon and autoloader. Russian T72 and T80 series tanks all have autoloaders. Finally, the Israeli Merkeva tank uses auto target trackers to improve gun accuracy.

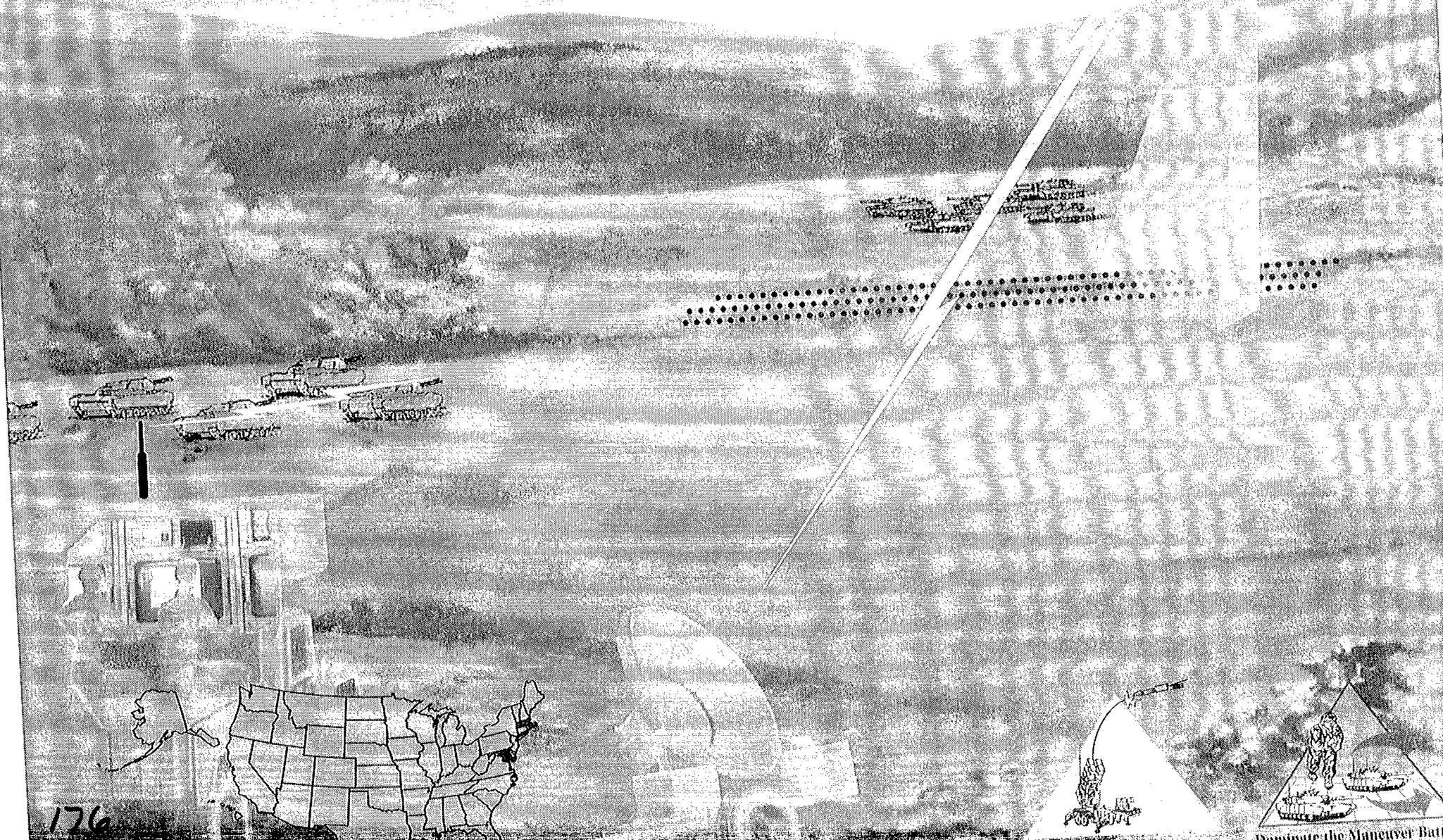
FOREIGN MILITARY SALES: The US continues to be involved in the Quadripartite Future Tank Main Armament agreement between the US, Germany, France and the United Kingdom. The goal of this agreement is to develop a common large caliber cannon and bullet.

PROGRAM STATUS: ATAS is a two phased program that is on track through FY03. Phase I will conclude with the testing of a Bradley Fighting Vehicle Autotracker on an M1A2 in FY97. Phase two involves the integration and testing of advanced fire control components in an M1A2 System Enhancement Program tank in FY98. The XM291 and autoloader will be added to this demonstrator and tested in FY99. This will be followed by Engineering and Manufacturing development of the XM291 gun leading to its type classification in FY03.

PROJECTED ACTIVITIES: Testing of an M1A2 with Auto Target Tracker in FY97.

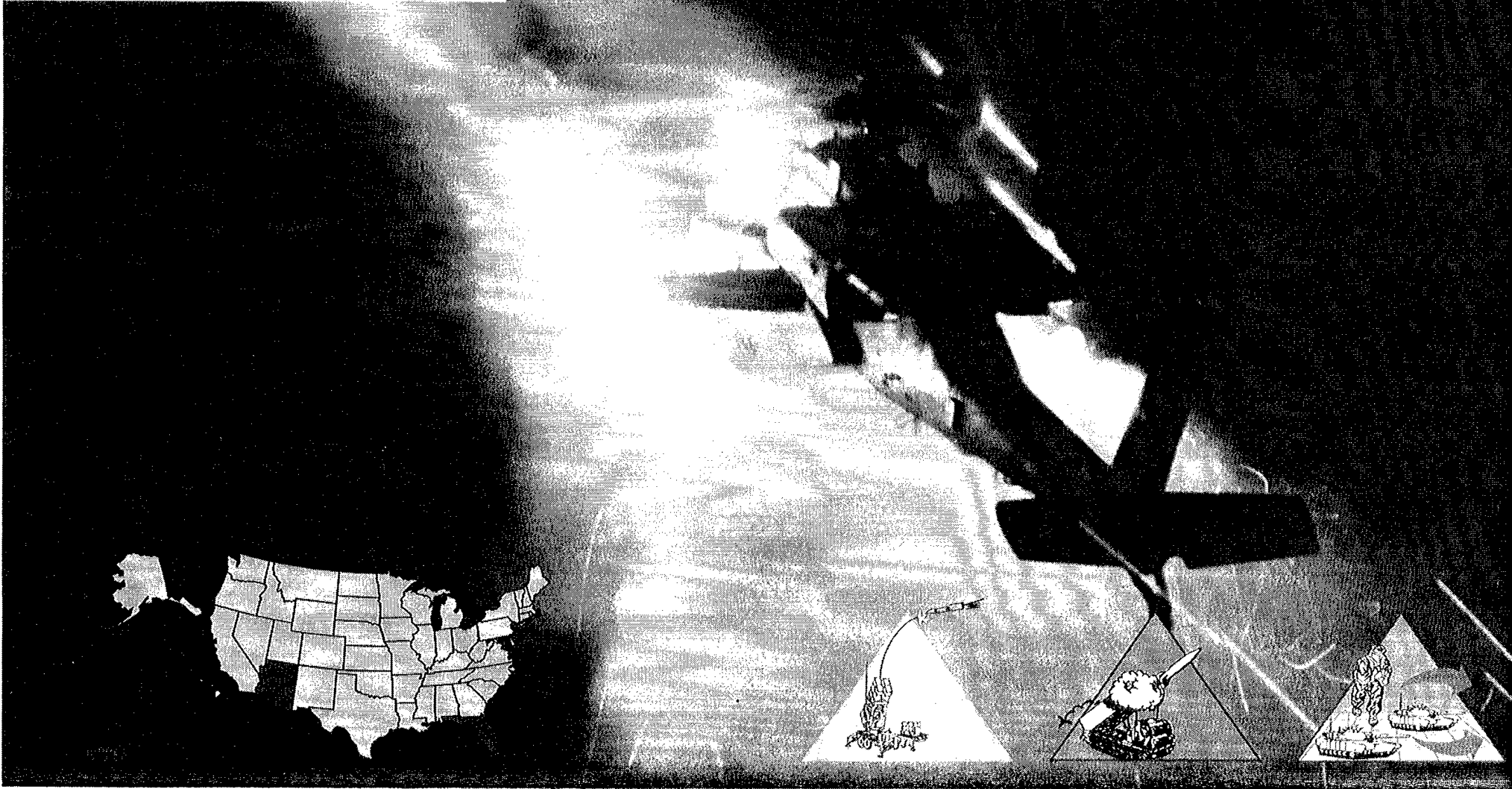
PRIME CONTRACTOR:

Vehicle Integration:	General Dynamics (Land Systems) (Sterling Heights, MI)
Firecontrol System:	Texas Instruments (Plano, TX)
Autoloader:	Western Howen Design (Irvine, CA)



SCIENCE AND TECHNOLOGY	CONCEPT	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
	DEM/VAL			

- MISSION:** The Airborne Standoff Minefield Detection System (ASTAMIDS) provides a near real time stand-off minefield detection and survey system that can be employed in all conflict levels of air land operations.
- CHARACTERISTICS:** ASTAMIDS consists of an imaging sensor mounted on an Unmanned Aerial Vehicle (UAV) and a processor/algorithm integrated into the UAV Ground Control Station (GCS). The sensor will be controlled by the UAV GCS, transmitting minefield imagery to the GCS, and then processed in near real time. Minefield data will be displayed and disseminated to using units similar to other Reconnaissance, Intelligence, Surveillance, and Target Acquisition data.
- FOREIGN COUNTERPART:** No known foreign counterparts.
- FOREIGN MILITARY SALES:** No foreign military sales.
- PROGRAM STATUS:** The ASTAMIDS program is currently in the Demonstration and Validation phase of development. Milestone II is scheduled for 4QFY97; Milestone III is scheduled for 4QFY00.
- PROJECTED ACTIVITIES:** Technical Testing and Early User Test and Experimentation will be completed 3QFY97.
- PRIME CONTRACTOR:** Two competing systems with technical downselect at MSII:
 Raytheon (Tewksbury, MA)
 Westinghouse (Baltimore, MD)
 * See appendix for list of subcontractors.



MISSION: The mission of the attack helicopter is to conduct rear, close, and deep operations; deep precision strike; and provide armed reconnaissance and security when required in day, night and adverse weather conditions.

CHARACTERISTICS: Longbow is a development and acquisition program for a millimeter wave radar air/ground targeting system capable of being used day, night, in adverse weather, and through battlefield obscurants. Longbow consists primarily of the integration of a mast-mounted millimeter wave fire control radar, a radar frequency interferometer, and a radar frequency fire-and-forget HELLFIRE missile onto the Apache. Longbow's digitized target acquisition system provides automated detection, location, classification, prioritization, and target handover. The AH-64D cockpit is redesigned to digitize and multiplex all systems. The MANPRINT crew stations have multifunction displays to reduce pilot work load and increase effectiveness. The modernized Apache heavy attack team now will be able to provide a truly "coordinated" rapid-fire (16 separate targets within 1 minute) capability to the maneuver force commander on a 24-hour basis in day, night, and adverse weather conditions.

FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: Netherlands and United Kingdom

PROGRAM STATUS: The Apache Longbow System entered Full Scale Development in December 1990, following an extremely successful Proof of Principle (POP) phase. Technical success during POP culminated with the live firing of missiles against a wide variety of targets, moving and stationary, through smoke and obscurants. The initial Operational Test and Evaluation, conducted from January through March 1995, proved the Apache Longbow to be an operationally effective and suitable weapon system. As expected, the Apache Longbow (AH-64D) — with its capability to engage targets in weather and obscurant conditions which preclude the employment of laser-guided weapons — was far more effective in defeating threat armored vehicles and more survivable in the threat air defense environment than the AH64A. The Apache Longbow received Milestone III production approval in October 1995. Single year contracts for the airframe and fire control radar were awarded in December 1995 and March 1996 respectively. A five year multiyear contract for the airframe was signed on 16 August 1996. The current program objective calls for 227 Longbow fire control radar mission kits capable of being installed on the Apache's modernized fleet (758 minus attrition) being upgraded to the new AH-64D baseline configuration. The Apache Longbow will add significant warfighting capability to the combined arms team through increased survivability, lethality, and versatility, as well as through long-term reliability improvements.

PROJECTED ACTIVITIES: First production delivery: March 1997.
First Unit Equipped: July 1998.

PRIME CONTRACTOR: Joint Venture: Lockheed Martin (Orlando, FL) and Northrup Grumman (Baltimore, MD)
McDonnell Douglas (Mesa, AZ)

* See appendix for list of subcontractors.



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47-62

Dominate the Maneuver Battle

SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL		PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
			EMD		

Bradley Fire Support Team (BFIST) Vehicle

MISSION: The Bradley Fire Support Team (BFIST) Vehicle provides an integrated Bradley-based fire support platform that allows company fire support teams and battalion/brigade fire support officers to plan, coordinate, execute, and direct timely, accurate indirect fires. Plans for BFIST production include both Bradley A2 Operation Desert Storm-based improvements and A3 variants.

CHARACTERISTICS:

Length:	30.96 ft
Width:	17.04 ft with armor tiles; 15.48 ft with armor skirts
Height:	14.04 ft
Weight:	60,000 lbs combat loaded
Power Train:	600 hp Cummins V093T diesel engine with GM-Allison HMPT-500-3 hydromechanical automatic transmission
Cruising Range:	250 mi
Road Speed:	38 mph
Crew:	4
Vehicle Armament:	25 mm Bushmaster cannon; 7.62 mm, M240C machine gun
Distribution:	Armor/Infantry Brigades-Battalions; Cavalry Regiments-Squadrons, Field Artillery Battalions
Current Models/Variants:	A3-based BFIST planned (XM7A1)

FOREIGN COUNTERPART: France: AMX-10 PAC-90, AMX VTT/LT; Russia: BMP PRP-3, BMP PRP-4; United Kingdom: MCV-80 Warrior MAOV; FV-432 AV

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: In FY96, the Bradley A2 Operation Desert Storm (ODS) BFIST (XM7) remained in engineering and manufacturing development. The Bradley Program Office conducted preliminary and critical design reviews for the A2 ODS BFIST were completed in 1QFY96 and 2QFY96 respectively. The first Bradley A2 ODS BFIST preproduction type was completed in 4QFY96.

PROJECTED ACTIVITIES: In FY97, the XM7 preproduction prototype will undergo contractor and government production qualification testing. A Low Rate Initial Production decision is expected in 4QFY97.

PRIME CONTRACTOR: FMC (United Defense, LP) (San Jose, CA)

* See appendix for list of subcontractors.



MISSION: The Bradley M2 Infantry/M3 Cavalry Fighting Vehicle (IFV/CFV) provides infantry and cavalry fighting vehicles with digital command and control capabilities, significantly increased situational awareness, enhanced lethality and survivability, and improved sustainability and supportability.

CHARACTERISTICS:

Length:	30.96 ft
Width:	17.04 ft with armor tiles; 15.48 ft with armor skirts
Height:	14.04 ft
Weight:	67,000 lbs combat loaded
Power Train:	600 hp Cummins V093T diesel engine with GM-Allison HMPT-500-3 hydromechanical automatic transmission
Cruising Range:	250 mi
Road Speed:	38 mph
Crew:	9 (3 on-board; 6 dismounts)
Vehicle Armament:	25 mm Bushmaster cannon; TOW II missile system; 7.62 mm, M240C machine gun
Distribution:	Armor/Infantry Brigades; Cavalry Regiments, Division Cavalry Squadron
Current Models/Variants:	Bradley M2/M3A0, A1, A2, A2ODS (Operation Desert Storm) IFV/CFVs, Bradley Fire Support Team (BFIST) Vehicle, Bradley Stinger Fighting Vehicle (BSFV)

FOREIGN COUNTERPART: China: Type 90, WZ-503; France: AMX-10P, AMX VCI; Germany: Marder 1; Russia: BMP 1, 2, & 3; United Kingdom: MCV-80 Warrior, FV-432

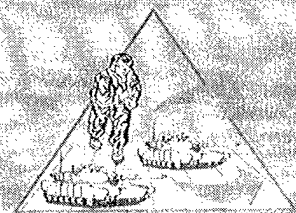
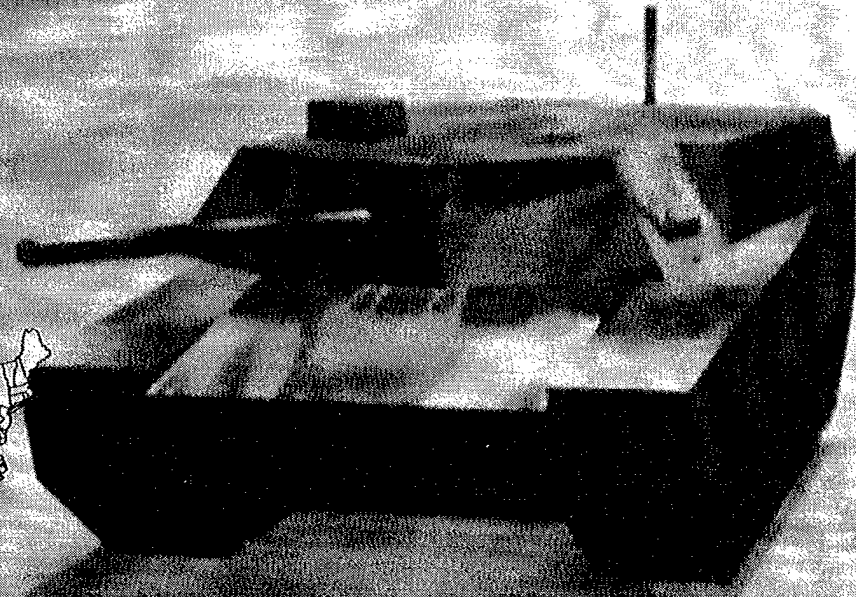
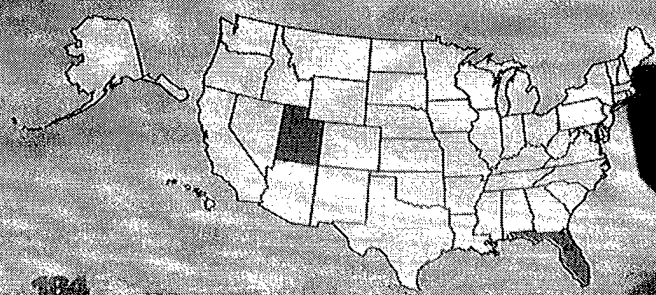
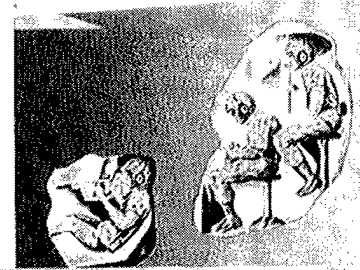
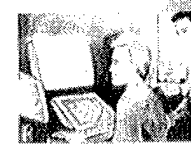
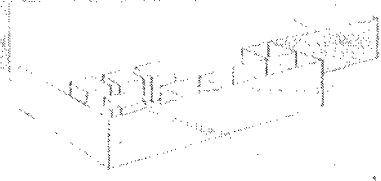
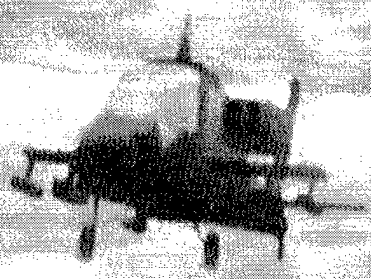
FOREIGN MILITARY SALES: Saudi Arabia (Bradley A2)

PROGRAM STATUS: In FY96, the Bradley Program Office will complete upgrade of selected Bradley AOs to the A2 configuration, continue upgrade of Bradley A1s to the A2 configuration, and begin conversion and fielding of selected Bradley A2s to the A2 Operation Desert Storm (ODS) configuration (first unit equipped in 1QFY97). The Bradley A3 remains in engineering and manufacturing development. The first Bradley A3 preproduction prototype was completed in 4QFY96.

PROJECTED ACTIVITIES: In FY97, Bradley A3 preproduction prototypes will undergo contractor and government production qualification testing and take part in initial limited user testing. A Low Rate Initial Production (LRIP) decision is expected in 2QFY97 with LRIP beginning in 3QFY97.

PRIME CONTRACTOR: FMC (United Defense, LP) (San Jose, CA)

* See appendix for list of subcontractors.



Dominate the Maneuver Battle

SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL		PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
			EMD		

MISSION: The Close Combat Tactical Trainer (CCTT) provides realistic individual and collective training for armor and mechanized vehicle crews on a simulated battlefield.

CHARACTERISTICS: The CCTT's function is to train active and reserve component M1 Tank and M2/3 Bradley crews on mission training plan-based collective (crew through battalion task force) tasks and skills in command, control, communications, and maneuver on a simulated, fully interactive, real-time battlefield. The CCTT will simulate, in real time, the conduct of combat operations in a realistic environment with an appropriate and challenging opposing force that will require realistic individual, crew, and staff actions, placing the stresses of combat on all participants. The CCTT is fully distributed interactive simulation (DIS) compliant and is capable of conducting joint/coalition combined arms training with other CCTT interoperable training systems. The system will allow individuals, crews, and units to operate in a simulated combat environment, reducing the impact of restrictions of weapon effects, safety, terrain limitations, and time, and will assist in overcoming the effects of crew turbulence and scarce resources.

The CCTT program comprises a group of fully interactive networked simulators and command, control, and communications workstations, replicating the M1 and M2/3 vehicles and weapon systems of a company/team operating on a simulated real-time battlefield. The system will exist in both fixed-site and mobile versions. The fixed-site version will be static at all times during operation. The mobile version will be static during operation but will move over primary and secondary roads during transport from site to site. The mobile version is capable of deploying with the unit during contingency operations.

FOREIGN COUNTERPART: No known foreign counterparts.

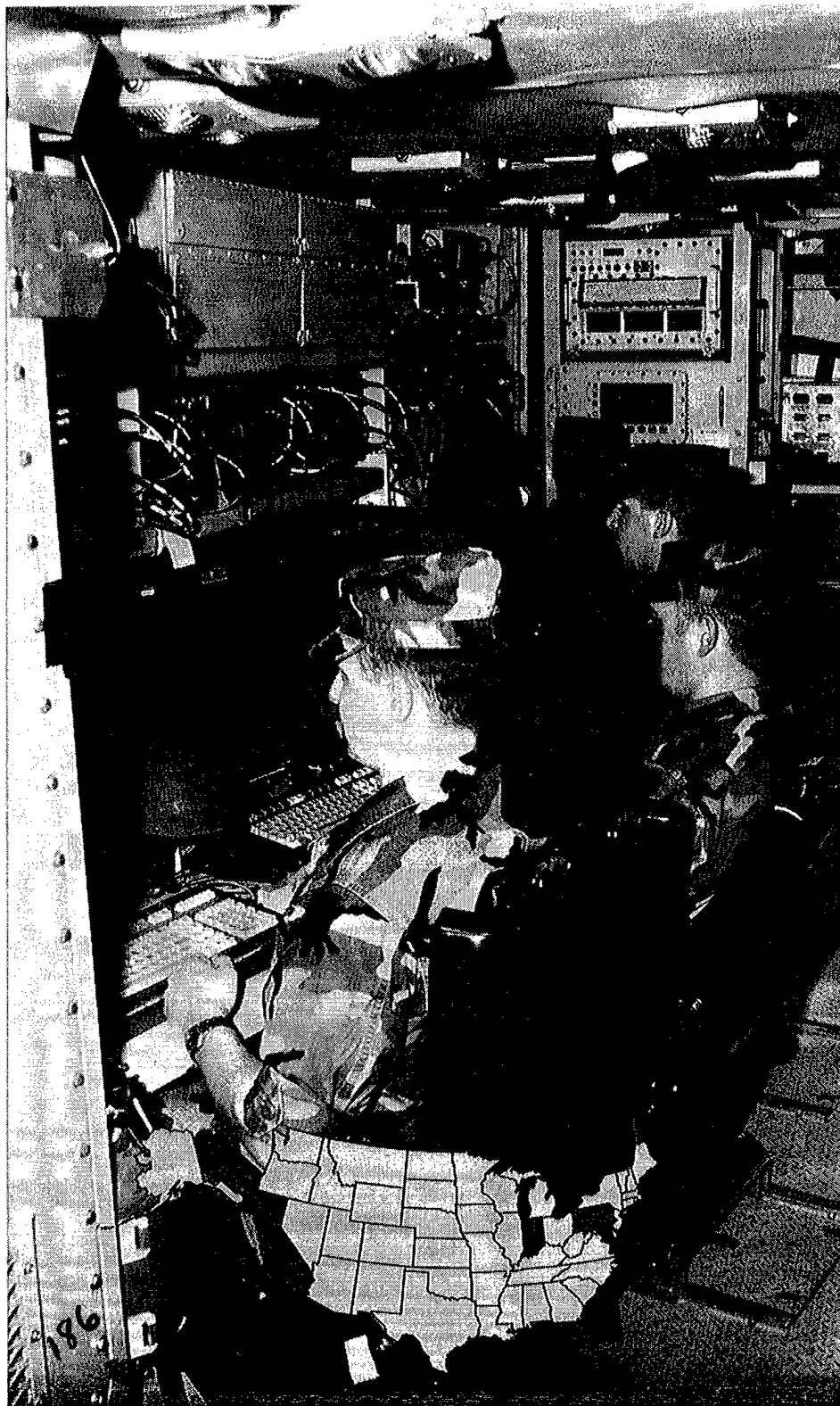
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The CCTT program successfully completed Milestone I/II ASARC. The contract was awarded in November 1992.

PROJECTED ACTIVITIES: Milestone III Procurement Decision.

PRIME CONTRACTOR: Lockheed-Martin (Orlando, FL)

* See appendix for list of subcontractors.



Win the Information War

Dominate the Maneuver Battle

PRODUCTION AND DEPLOYMENT

Command and Control Vehicle (C2V)

MISSION: The Command and Control Vehicle (C2V) provides a highly mobile, survivable, and reconfigurable platform capable of hosting current and future command, control, communications, computer, and intelligence systems for operational planning use by battalion through corps battle staffs in heavy force operations.

CHARACTERISTICS:

Length:	35.4 ft
Width:	14.04 ft
Height:	12.72 ft
Weight:	56,000-66,000 lbs combat loaded
Power Train:	600 hp Cummins V093T diesel engine with GM-Allison HMPT-500-3EC hydromechanical automatic transmission
Cruising Range:	275 miles
Road Speed:	40 mph
Crew:	variable (maximum of 9)
Armament:	7.62mm, M240 series machine gun
Distribution:	Corps-Battalion
Models/Vars:	Platform for the Ground Based Common Sensor-Heavy, Armored Transport and Treatment Vehicle (planned)

FOREIGN COUNTERPART: China: Type 85 ACV, WZ-506, Type 90 CV; France: AMX-10PC, AMX VTT/PC; Germany: Tpz1 FuFu (Fuchs); Russia: BTR-50PU, MT-LBU, BMP-1 Ksh; United Kingdom: MCV-80 Warrior CV, FV-432C

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: In FY96, the C2V remained in engineering and manufacturing development with the Bradley Program Office completing fabrication of four C2V preproduction prototypes. These vehicles are currently undergoing contractor and government production qualification testing. Early prototype C2Vs known as FCCVs and initial C2V preproduction prototypes were used during phased limited user testing (LUT); LUT was completed in 3QFY96. C2V was approved for Low Rate Initial Production (LRIP) in 4QFY96. C2V is scheduled to begin LRIP in 1QFY97.

PROJECTED ACTIVITIES: C2V will participate in the Task Force XXI and related Force XXI experiments.

PRIME CONTRACTOR: FMC (United Defense, LP) (San Jose, CA)

* See appendix for list of subcontractors.



MISSION: Crusader will be the indirect fire support "system of systems," providing direct and general support fires to maneuver forces on the future battlefield.

CHARACTERISTICS: The Self Propelled Howitzer (SPH) is a 155 mm self-propelled howitzer system that will provide a significant increase in artillery survivability, lethality, mobility, and operational capability and effectiveness through use and integration of advanced technology in its subsystems and combat components. The SPH will deliver unprecedented firepower capabilities at extended ranges. Some of the SPH critical technologies and capabilities include the XM297 inter mid wall cooled cannon, Modular Artillery Charge System (MACS), autosetable multioption fuze, automated ammunition-handling system, enhanced survivability, and improved mobility. The armored Resupply Vehicle (RSV) will provide the foundation for resupply of ammunition and fuel for the SPH. Inserting high-payoff technologies in robotics, automation, expert systems, vetronics, and improved ammunition propulsion into the resupply process, the RSV will provide the necessary ammunition to meet the expected firing rates; meet the goals for autonomous operations; and capitalize on cost and operational advantages of component commonality. RSV critical technologies and capabilities include a teleoperated docking arm, automated ammunition resupply system, automated fuel transfer system, and improved mobility. These systems, when fielded, will displace the M109A6 Paladin self-propelled howitzer and M992A2 field artillery ammunition supply vehicle in rapidly deployable and forward-deployed forces.

SPH

Range: 40+ km (assisted)
 Rate of fire: 10-12 rd/min
 Multiple round,
 simultaneous impact: 4 rd (1 SPH)
 Ammo storage: 60 fuzed rd
 Crew: 3 (operable by 1)

RSV

Automated rearm: 12 rd/min
 Automated refuel: 132-190 L/min
 Range: 450 km
 Speed: 48 mph highway; 30 mph cross country
 Ammo storage: 130-200 fuzed rd
 Crew: 3

FOREIGN COUNTERPART: No known foreign counterpart.

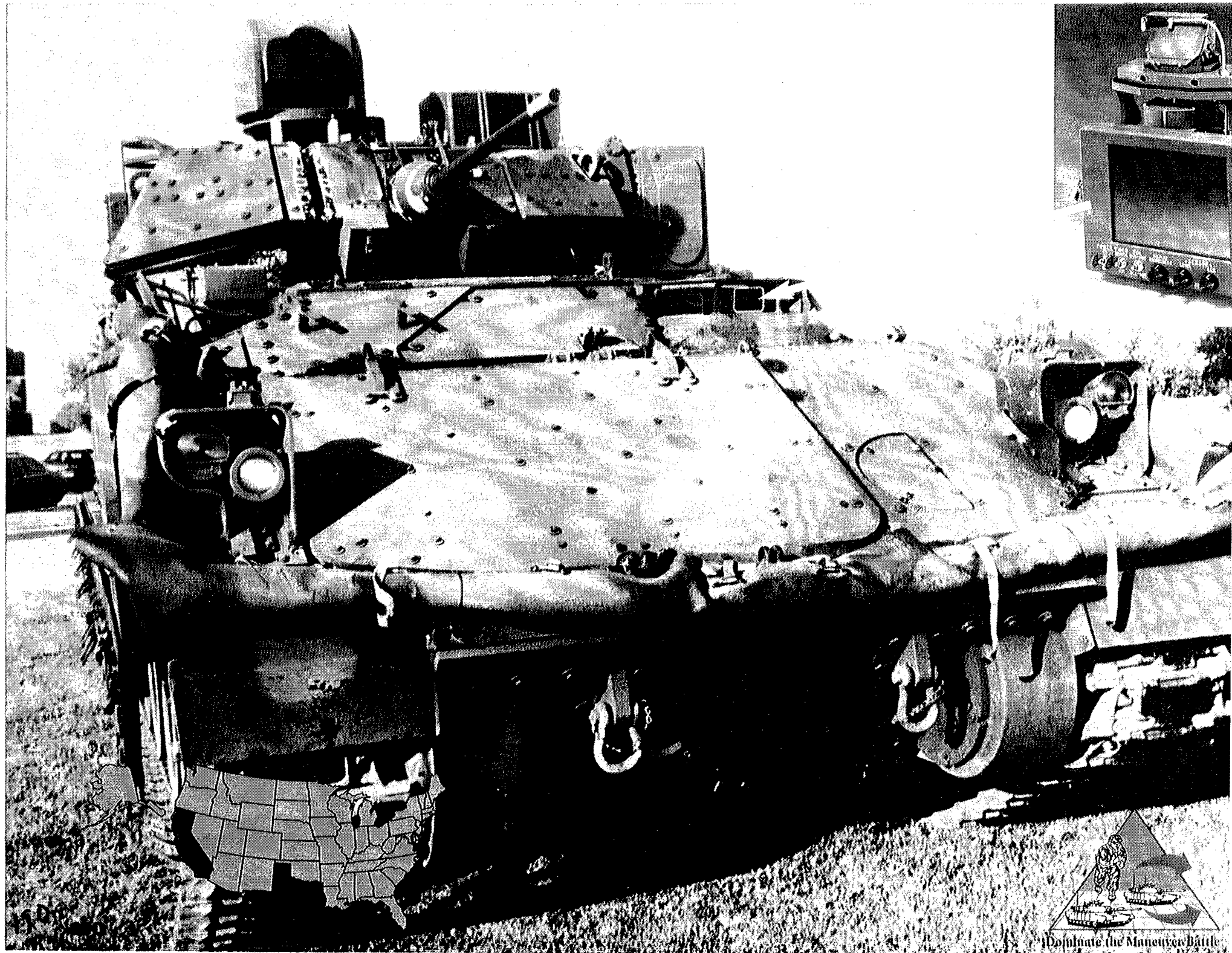
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: In 1992, the Army successfully demonstrated fuze and projectile compatibility and successfully demonstrated the firing of a multi-option Fuze for Artillery. In 1993/1994, the Army fabricated/assembled a hardstand cannon and autoloader which demonstrated 12 rounds per minute automated ammunition handling, azimuth and elevation slew rates, pointing accuracy and integrated technical and tactical fire control; fabricated and assembled an Automotive Test Rig with an LV100, 1500 horsepower engine, electric drive and self-cleaning air filter; fabricated and assembled a four-man reconfigurable crew module which demonstrated man machine interface, full audio, video and data collection capabilities; and demonstrated ammunition transfer rates of 12 rounds per minute. In 1996 the Army selected the XM296 and MACS as the armament system for Crusader. Currently, Crusader is in the Demonstration and Validation (DEM/VAL) phase of development.

PROJECTED ACTIVITIES: PEO, Field Artillery Systems/Commandant, FA School; in-process review scheduled for 3QFY97.

PRIME CONTRACTOR: FMC (United Defense, LP) (Minneapolis, MN)

* See appendix for list of subcontractors.



PRODUCTION AND DEPLOYMENT

Driver's Vision Enhancer (DVE)

MISSION: The AN/VAS-5 Driver's Vision Enhancer (DVE) provides the drivers of combat and tactical wheeled vehicles unparalleled flexibility to continue day or night operations during periods of severely degraded visual conditions caused by smoke, fog, dust or similar conditions.

CHARACTERISTICS: This thermal viewing system increases vehicle mobility under very poor driving conditions. DVE's cost is also very low when compared to other FLIRs. The DVE provides mobility under the same conditions as the target engagement sensors providing a critical Go vs. No Go capability. DVE provides situational awareness, and ambush detection and vehicle tracking. For the first time, combat service support will be able to keep up with the Warfighter.

The DVE's sensor module consists of a second generation Forward Looking Infrared (FLIR). The output device consists of a high quality commercial flat-panel display and control module. The system is "Driver Friendly" and easy to use. DVE video imagery may also be distributed to other vehicle crew members. The DVE also contains a data port for linkage to the "digitized" battlefield.

The DVE can be easily adapted to any current or future US or NATO combat and tactical wheeled vehicle due to its "horizontal technology integration" features.

Bradley M2A2 ODS and M2A3
Abrams M1A2 and USMC M1A1
M58 Smoke Vehicle
Wolverine
Command & Control Vehicle
USMC Light Armored Vehicle
Grizzly
USMC Amphibious Assault Vehicle

Heavy Expanded Mobility Tactical Truck-HEMTT
High Mobility Multipurpose Wheeled Vehicle-HMMWV
Heavy Equipment Transporter System-HETS
Palletized Loading System - PLS
Family of Medium Tactical Vehicles - FMTV
Hercules
Paladin
USMC Armored Vehicle Launched Bridge

FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales. However, DVE has considerable potential as a Driver's Aid for NATO countries interested in Rationalization, Standardization and Integration.

PROGRAM STATUS: Limited procurement contract awarded 30 August 1995.

PROJECTED ACTIVITIES: Milestone III decision FY97.

PRIME CONTRACTOR: Texas Instruments (Dallas, TX)

*See appendix for list of subcontractors.



SCIENCE AND TECHNOLOGY	CONCEPT	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
	DEM/VAL			

MISSION: The Grizzly provides an in-stride capability to overcome simple and complex linear obstacles.

CHARACTERISTICS: The system will breach a full-width, clear lane to allow maneuver force mobility through minefields, rubble, tank ditches, wire, and other obstructions. The Army currently has no system with these capabilities. The Grizzly will be fielded in Division and selected Corps Engineer Battalions.

The Grizzly is an M1 Abrams chassis-based system equipped with a full-width mine clearing blade and a power-driven excavating arm. While buttoned up, the crew of two will be able to operate all systems. The vehicle contains electric drive, an advance open systems vehicle electronic architecture and provisions for digital battlefield command and control.

FOREIGN COUNTERPART: Germany: Pionierpanzer 2 Israel: MIKI Russia: IMR-2

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The Breacher program was initiated in FY92 as a result of lessons reinforced during Operation Desert Storm. The Army leveraged the work conducted under an Advanced Technology Transition Demonstrator program. A sole-source contract was awarded to United Defense, LP (formerly BMY) in September 1992 for Demonstration and Validation. Prototypes were delivered in 4QFY95. Early User Experiments were conducted in February 1996, and the system prototypes are undergoing technical performance testing. Blade performance testing using Automatic Depth Control was completed in November 1996.

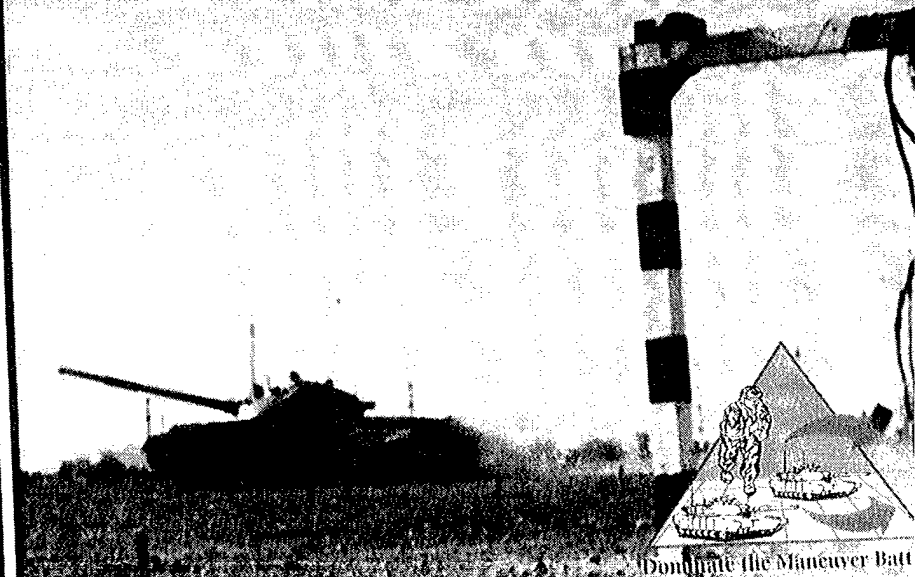
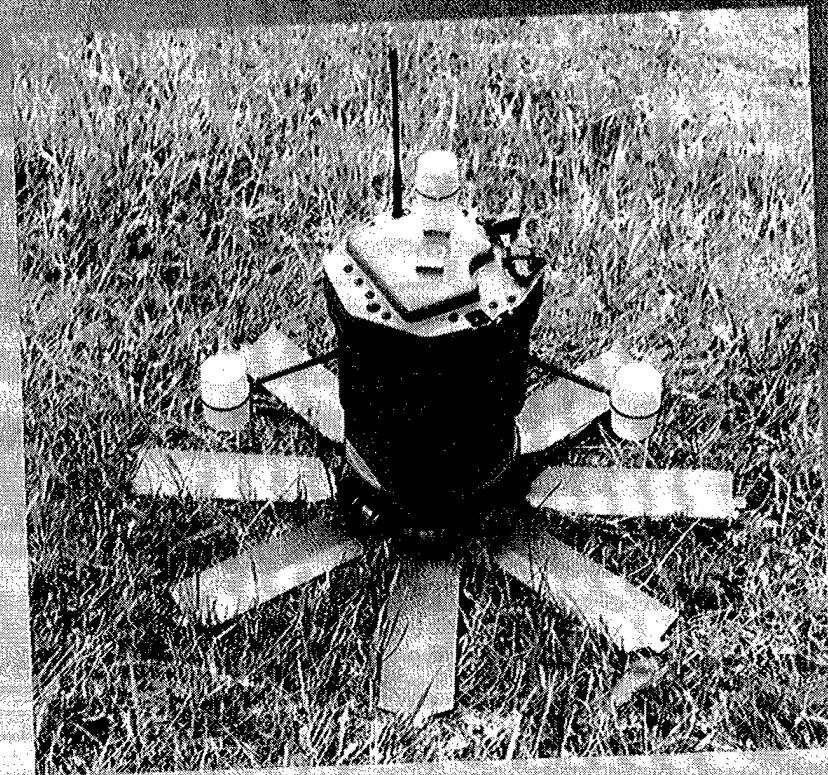
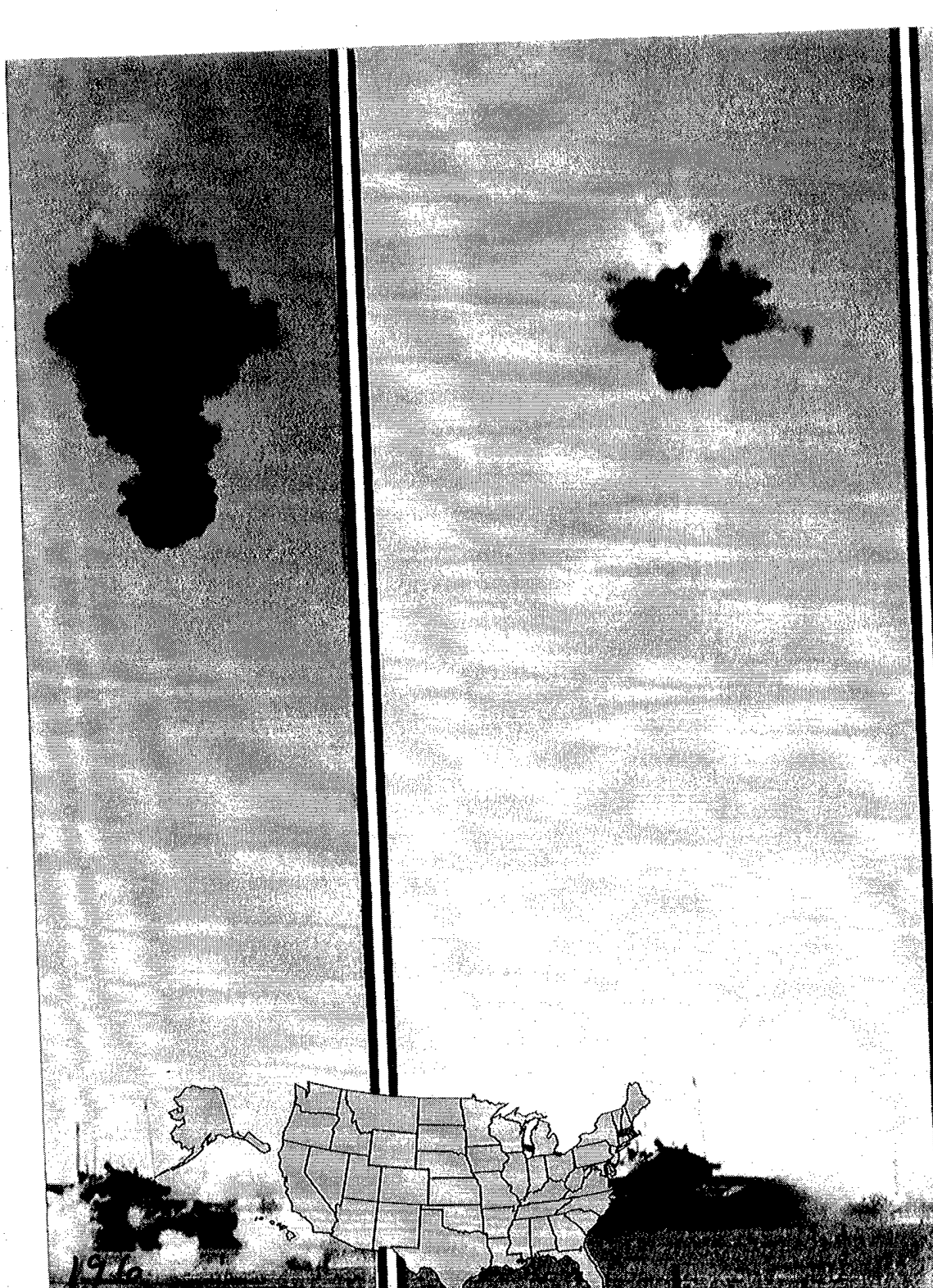
PROJECTED ACTIVITIES: Milestone II in FY97.

PRIME CONTRACTOR: FMC (United Defense, LP) (York, PA)

* See appendix for list of subcontractors.



SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
<div><div>HERCULES</div><div><div>MISSION:</div><div>The Hercules is a full-tracked, armored vehicle developed for towing, winching, and hoisting operations supporting battlefield recovery operations and evacuation of heavy tanks and other tracked combat vehicles.</div></div><div><div>CHARACTERISTICS:</div><div>The Hercules will be type classified as the M88A2. The Hercules uses the existing M88A1 chassis but significantly improves towing, winching, lifting, and braking characteristics. The Hercules is the primary recovery support to the Abrams tank fleet, and future heavy systems such as the Breacher, Wolverine, and heavy self-propelled artillery.</div><div><div>Length:</div><div>339 in</div><div>Power train:</div><div>12 cylinder, 1,050 hp air-cooled diesel engine with 3-speed automatic transmission</div><div>Width:</div><div>144 in</div><div>Height:</div><div>123 in</div><div>Cruising range:</div><div>200 mi</div><div>Weight:</div><div>70 ton</div><div>Draw bar pull:</div><div>70 ton</div><div>Speed (w/o load):</div><div>29 mph</div><div>Boom capacity:</div><div>35 ton</div><div>(w/load):</div><div>20 mph</div><div>Winch Capacity:</div><div>70 ton / 300 ft</div><div>Armament:</div><div>One .50 caliber machine gun</div><div>Aux. Winch Capacity:</div><div>3 ton / 670 ft</div></div></div><div><div>FOREIGN COUNTERPART:</div><div>There is no foreign counterpart that provides the combined weight, towing, winch, and hoist capacities developed in the Hercules. However, many foreign nations do incorporate recovery systems on existing recovery chassis or main battle tank chassis.</div></div><div><div>FOREIGN MILITARY SALES:</div><div>Kuwait (1994)</div></div><div><div>PROGRAM STATUS:</div><div>The Hercules is undergoing low rate initial production testing that includes 9,000 miles of RAM, performance and user evaluations. Initial fielding is planned for early FY97. PQT/IOTE was conducted 2-4QFY96.</div></div><div><div>PROJECTED ACTIVITIES:</div><div>Milestone III is scheduled for 1QFY97. First Unit Equipped is scheduled for 2QFY97.</div></div><div><div>PRIME CONTRACTOR:</div><div>FMC (United Defense, LP) (York, PA)</div><div>* See appendix for list of subcontractors.</div></div></div>					



HYDRA 70 ROCKET SYSTEM FAMILY



M274 SIGNATURE PRACTICE



M267 PRACTICE MPSM



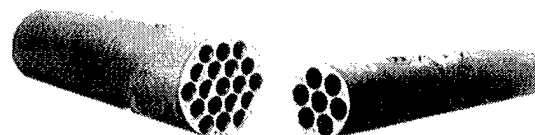
M261 MPSM



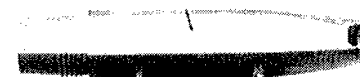
M151 HE/PD



ATAF, FLECHETTE



LWL



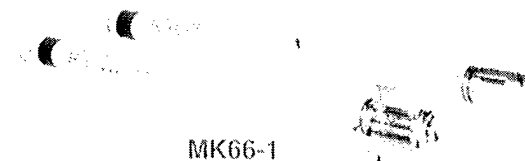
M151, WITHOUT FUZE



M257 ILLUMINATION



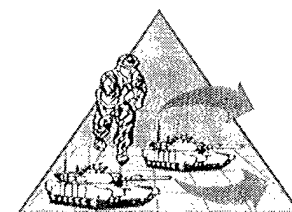
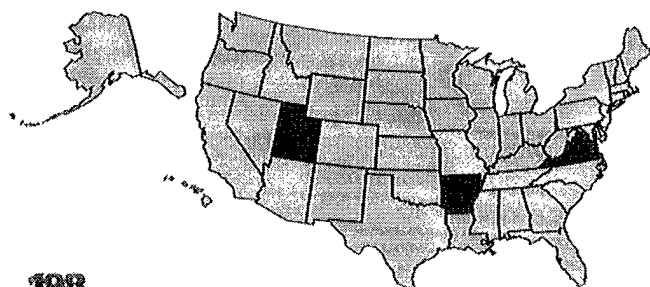
M264 SMOKE



MK66-1



M151 HE/RS



SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
PRODUCTION AND DEPLOYMENT					

MISSION: The family of HYDRA 70 rockets performs a variety of functions. The war reserve unitary and cargo warheads are used for anti-materiel, anti-personnel, and suppression missions. The family of rockets also includes smoke screening, illumination, and training warheads. HYDRA rockets are fired from Apache, Cobra, and Kiowa Warrior helicopters by the Army and are used from other platforms by Special Operations Forces, the Marine Corps, the Navy, and the Air Force.

CHARACTERISTICS: The warheads fall into three categories:

- (1) Unitary warheads with impact-detonating fuzes or remote-set multioption fuzes
- (2) Cargo warheads with airburst-range, setable fuzes using the "wall-in-space" concept or fixed standoff fuzes
- (3) Training rounds

FOREIGN COUNTERPARTS: Although there is no known foreign counterpart, many countries have expressed an interest in coproduction of this system.

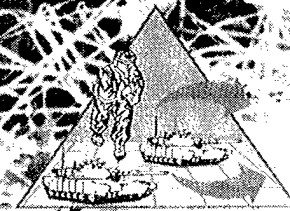
FOREIGN MILITARY SALES: Bahrain, Colombia, Egypt, Greece, Japan, Jordan, Korea, Kuwait, Netherlands, Pakistan, Saudi Arabia, Taiwan, Thailand, Tunisia, United Arab Emirates

PROGRAM STATUS: New award in 1QFY96. Production continuing through FY96.

PROJECTED ACTIVITIES: Performance Specification Contract Award in 2QFY97.

PRIME CONTRACTOR: Lockheed Martin (Camden, AR)

* See appendix for list of subcontractors.



PRODUCTION AND DEPLOYMENT

MISSION: Javelin provides a man-portable, medium anti-tank capability to the infantry, scouts, and combat engineers.

CHARACTERISTICS: Javelin is a man-portable, anti-tank system developed for the U.S. Army and U.S. Marine Corps. The system is highly lethal against tanks with conventional and reactive armor. Javelin comprises two major tactical components: a reusable Command Launch Unit (CLU) and a missile sealed in a disposable Launch Tube Assembly. The CLU incorporates an integrated day/night sight and provides target engagement capability in adverse weather and countermeasure environments. The CLU may also be used in the stand-alone mode for battlefield surveillance and target detection.

The Javelin system weighs less than 49.5 lb and has a maximum range in excess of 2,000 m. Javelin's key technical feature is the use of fire-and-forget technology which allows the gunner to fire and immediately take cover. Additional special features are the top attack and/or direct fire modes (for targets under cover), integrated day/night sight, advanced tandem warhead, imaging infrared seeker, target lock-on before launch, and soft launch (the Javelin can be fired safely from enclosures and covered fighting positions). Javelin replaces the Dragon.

FOREIGN COUNTERPART: Although not yet in production, the Israeli Spike and Gil are being promoted as having fire-and-forget capability. Other medium range systems currently fielded, or in development, include the Russian AT-7, the Swedish BOFORS BILL, the French MILAN 2T and the Euro Missile TRIGAT.

FOREIGN MILITARY SALES: Recent approval of the Javelin export version opens the door for Foreign Military Sales. Production capacity is expected to be available for foreign customers in FY98.

PROGRAM STATUS: After a 54-month Engineering and Manufacturing Development phase, the Javelin went into Low Rate Initial Production (LRIP) in FY94. Fielding of the system began in June 1996.

PROJECTED ACTIVITIES: The system will have a Milestone III full rate production decision in April 1997. A three year multiyear full rate production contract is planned for May 1997.

PRIME CONTRACTOR: Joint Venture: Texas Instruments/Lockheed Martin (Orlando, FL)
Lockheed Martin (Orlando, FL)
Texas Instruments (Lewisville, TX)

* See appendix for list of subcontractors.



MISSION: The Kiowa Warrior fills the armed reconnaissance role for attack helicopter and air cavalry units.

CHARACTERISTICS: The Kiowa Warrior currently is the only practical armed reconnaissance aircraft in the Army inventory until RAH-66 fielding begins early in the next decade. The OH-58D performs reconnaissance, security, command and control, target acquisition/designation, and defensive air combat missions. The Kiowa Warrior adds armed reconnaissance, light attack, and Multipurpose Light Helicopter (MPLH = rapid deployment, troop lift, cargo, and casualty evacuation) to the basic OH-58D Kiowa mission capabilities. The OH-58D has a Mast-Mounted Sight that houses a Thermal-Imaging System, Low-Light Television, and a Laser Rangefinder/Designator. A highly accurate navigation system permits precise target location that can be handed off to other engagement systems via the Airborne Target Handover System. The Laser Designator can provide autonomous designation for the laser HELLFIRE or remote designation for other laser-guided precision weapons. Air-to-Air Stinger (ATAS) provides security against threat aircraft. The armed retrofit program began in FY91 and provides air-to-ground weapons and other improvements to previously produced OH-58Ds.

Max gross weight: 5,500 lb
 Max speed: 118 kt—clean; 113 kt—armed
 Crew: 2
 Armament: ATAS, (2 round launcher) .50 caliber machine gun, HYDRA 70 (2.75 in) rockets (7-shot pod), HELLFIRE missiles (2 round launcher). Choice of one system per side.

FOREIGN COUNTERPART: France: Gazelle, Alloutte
 Germany: BO-105
 Russia: HINDs, HIPs, Hoplites

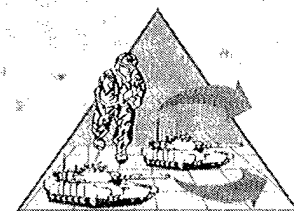
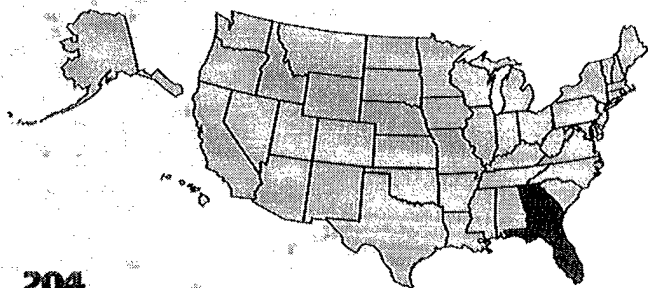
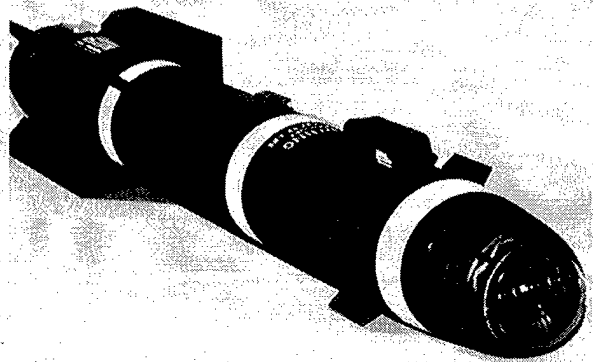
FOREIGN MILITARY SALES: Taiwan: 26 Kiowa Warriors. Deliveries complete.

PROGRAM STATUS: The OH-58D is in the 13th year of production. AHIPs began retrofit/remanufacture in FY93 for the Armed Kiowa Warrior version. There have been 267 aircraft fielded through September 1996. Aircraft deployments include the training bases at Fort Rucker and Fort Eustis, and operational units in CONUS, USAREUR, and Korea. The Procurement Objective is currently 398, with a total Army requirement of 507 aircraft. Deliveries of current contracts will end in September 1998.

PROJECTED ACTIVITIES: 22 Kiowa Warriors are in the manufacturing process.

PRIME CONTRACTORS: Allison Engines (Indianapolis, IN)
 Honeywell (Albuquerque, NM)
 McDonnell Douglas (Montovia, CA)
 Textron Inc. (Bell Helicopter) (Fort Worth, TX)

* See appendix for list of subcontractors.



Dominate the Maneuver Battle

PRODUCTION AND DEPLOYMENT

Laser HELLFIRE

MISSION: Laser Hellfire provides a heavy anti-armor and surgical strike capability for attack helicopters.

CHARACTERISTICS: Laser Hellfire is used as the main armament of the U.S. Army's AH-64 Apache and the U.S. Marine Corps' AH-1W Super Cobra attack helicopters. It is also used on the OH-58D Kiowa Warrior helicopter. The laser missile homes on a laser spot that can be projected from ground observers, other aircraft, or the launching aircraft itself. This enables the system to be employed in a variety of modes; autonomous, air or ground, direct or indirect, single shot, rapid, or ripple fire.

There are three versions of the Laser Hellfire missile in various stages of the life cycle:

Basic Hellfire: Semi-active laser seeker missile system.

Interim Hellfire: Similar to basic Hellfire but adds a precursor warhead to defeat reactive armor.

Hellfire II: This missile incorporates many improvements over the previous models of Hellfire, including laser obscurant/backscatter improvements. Other improvements include electro-optical countermeasures, hardening, improved target reacquisition capability, an advanced warhead capable of defeating all projected armor threats into the 21st century, reprogrammability to adapt to changing threats and mission requirement, shipboard compatibility, and regaining the original Hellfire missile weight and length.

Version:	Basic	Interim	HF II
Diameter:	7 in	7 in	7 in
Weight:	100 lb	107 lb	100 lb
Length:	64 in	71 in	64 in

FOREIGN COUNTERPART: Numerous countries have one or more wire, radio, or laser homing anti-armor missiles of varying accuracy and lethality.

FOREIGN MILITARY SALES: Egypt, Greece, Israel, Netherlands (direct sale), Saudi Arabia, Sweden, Taiwan, United Arab Emirates, United Kingdom (direct sale).

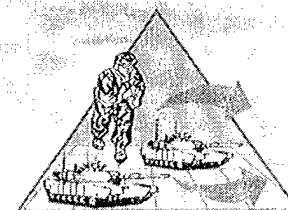
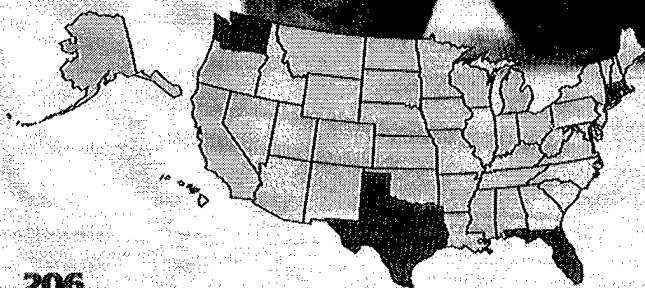
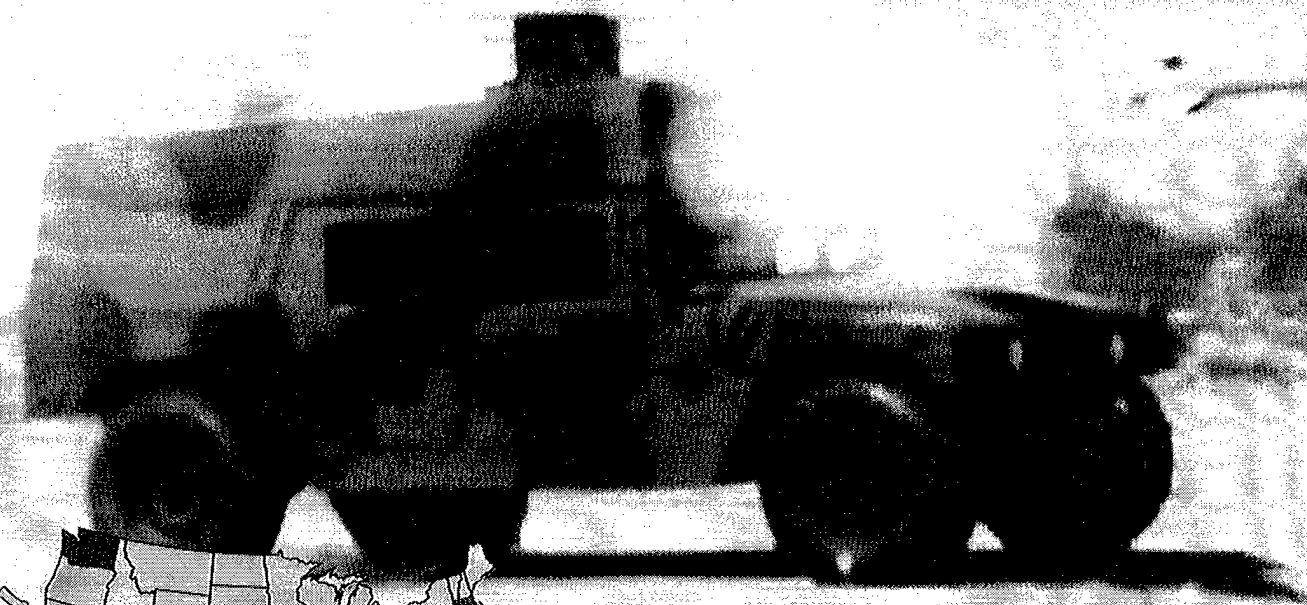
PROGRAM STATUS: There are three versions of the Laser HELLFIRE missile in various stages of the life cycle:
Basic HELLFIRE: Semi-active laser seeker, 31,616 produced by both Lockheed Martin and Rockwell International since 1982. All deliveries have been completed.

Interim HELLFIRE: Final deliveries were completed in January 1994, with 8,807 missiles produced for the U.S. Army.

HELLFIRE II: Deliveries began in March 1995.

PROJECTED ACTIVITIES: Final production buy in FY97 for 1,800 missiles. Deliveries of HELLFIRE II will continue through 1999.

PRIME CONTRACTOR: Hellfire Systems Limited Liability Company (Lockheed Martin, Orlando, FL and Rockwell International, Duluth, GA).



MISSION: The Line-of-Sight Anti-Tank (LOSAT) will provide a high volume of extremely lethal, accurate missile fire, effective against heavy armor systems at ranges exceeding tank main gun ranges.

CHARACTERISTICS: The LOSAT weapon system consists of kinetic energy missiles (KEM) and a second generation forward looking infrared (FLIR)/TV acquisition sensor mounted on an air mobile Heavy High Mobility Mult-Purpose Wheeled Vehicle (HMMWV) combat vehicle chassis in order to help remedy the early entry force lethality shortfall against heavy armor. The key attractions of the LOSAT are the tremendous overmatch lethality of the KEM (defeats all predicted future armored combat vehicles) and its deployability, which is compatible with the early entry forces. The LOSAT also will provide increased survivability and countermeasure effectiveness. The LOSAT will operate out to the maximum range of direct fire combat engagements and will provide dramatically increased rates of fire and enhanced performance under day and night, adverse weather, and obscured battlefield conditions. The current program provides for the conduct of a demonstration of the HMMWV platform and will involve flight tests and early soldier evaluations of the system. The demonstration program is a cost-effective means to assess the utility of LOSAT to the early entry force as part of the rapid force projection initiative (RFPI). This project will develop improved technologies for KE missile defeat of robust armor targets and evaluate integration of the LOSAT capability into an air mobile configuration. Project objectives are to position the technology for future acquisition decisions, demonstrate subsystem capabilities in flight tests and dirty battlefield environment, evaluate the utility for the LOSAT technology for the early forces, demonstrate an integrated HMMWV-based LOSAT system in flight test and advanced warfighting experiments, and evaluate affordability issues.

KEM

Weight: 177 lb

Length: 112 in

Diameter: 6.4 in

Range: Greater than TOW

Crew: 2

FOREIGN COUNTERPART: No known foreign counterparts.

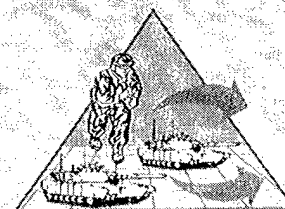
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The LOSAT program began a Technology Demonstration phase of development in 4QFY92. The demonstration has completed priority risk reduction tasks to the fire control system (FCS), the demonstration of the FCS upgrades in dirty battlefield and flight tests. The early entry force (EEF) demonstration includes the design, fabrication, and integration of a LOSAT system into a heavy HMMWV chassis, a missile flight test program from the HMMWV-based LOSAT fire unit, and advanced warfighting experiments (AWE) user testing.

PROJECTED ACTIVITIES: Perform system engineering requirements analyses for application of the LOSAT system on the HMMWV configuration. Conduct technical analyses to establish system error, power, weight, space and timing budgets for the HMMWV configuration. Establish chassis and crew environment during missile firings including noise, pressure, recoil, exhaust products, and temperature. Update the LOSAT system simulation for change associated with the HMMWV configuration. Support distributed interactive simulation crew station simulation (DISCSS) related to RFPI analysis simulation effort and in anti-armor advanced technology demonstration (A2ATD) experiments.

PRIME CONTRACTOR: Lockheed Martin Vought Systems (Dallas, TX)

*See appendix for list of subcontractors.



SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD		OPERATIONS AND SUPPORT
				PRODUCTION AND DEPLOYMENT	

MISSION: Longbow HELLFIRE will provide an adverse weather, fire-and-forget, heavy anti-armor capability for the Army's AH-64D Longbow Apache attack helicopter.

CHARACTERISTICS: Longbow HELLFIRE is a fire-and-forget version of the HELLFIRE missile. The Longbow program also includes development of a mast-mounted Fire Control Radar (FCR) and numerous modifications to the Apache helicopter. The Longbow FCR will locate, classify, and prioritize targets for the Longbow HELLFIRE missile. The Longbow system is being developed for integration onto the Apache and Comanche helicopters. Longbow HELLFIRE incorporates a millimeter wave radar seeker on a HELLFIRE II aft section bus. The primary advantages of the Longbow missile include adverse weather capability (rain, snow, fog, smoke, and battlefield obscurants); millimeter wave countermeasures survivability; fire-and-forget guidance, which allows the Apache to launch and then immediately remask, thus minimizing exposure to enemy fire; an advanced warhead capable of defeating all projected armor threats into the 21st century; and reprogrammability to adapt to changing threats and mission requirements. The combination of Longbow HELLFIRE's fire-and-forget capability and HELLFIRE II's precision guidance will provide the battlefield commander with flexibility across a wide range of mission scenarios, permitting fast battlefield response and high mobility not afforded by other anti-armor weapons.

Diameter: 7 in
Weight: 108 lb
Length: 68 in

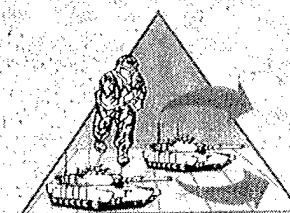
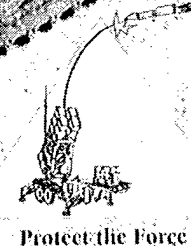
FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: United Kingdom (direct commercial sale).

PROGRAM STATUS: Longbow Hellfire entered production on 13 October 1995 with the successful completion of the Milestone III Defense Acquisition Board. The first low-rate initial production (LRIP) contract was awarded in December 1995 for 352 missiles.

PROJECTED ACTIVITIES: The second LRIP contract is scheduled for award in FY97. First Unit Equipped (FUE) in July 1998.

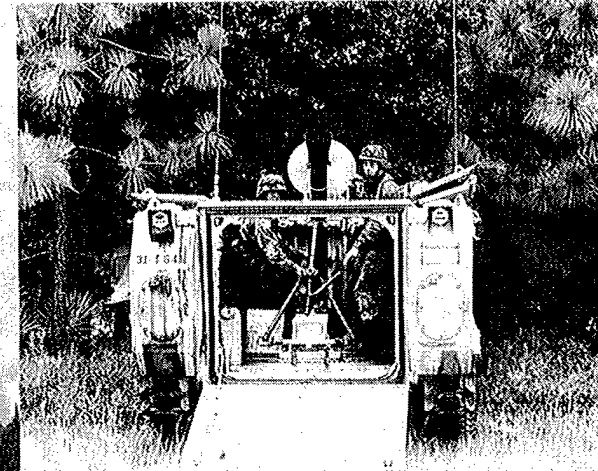
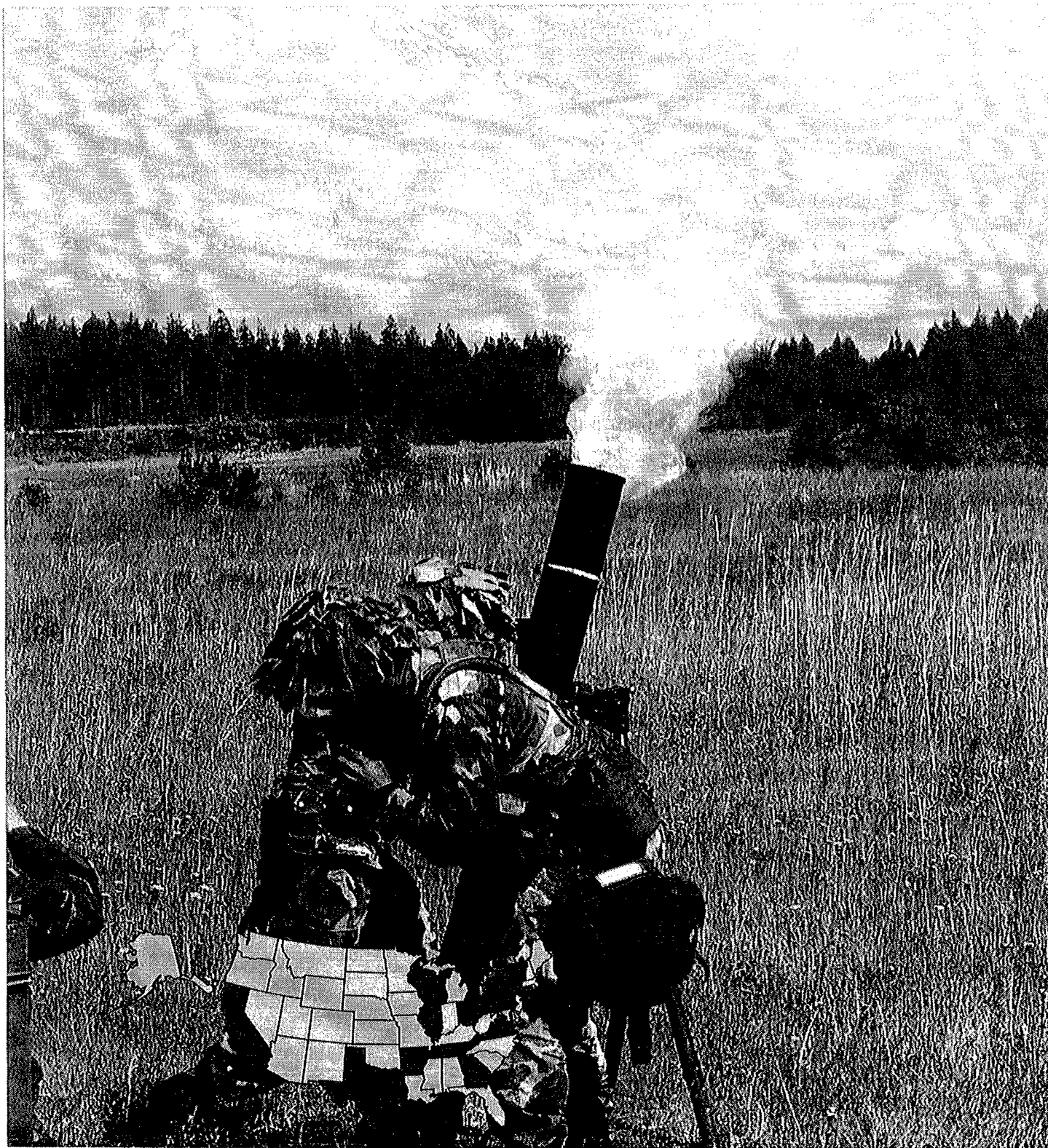
PRIME CONTRACTOR: Longbow Hellfire Limited Liability Company (Lockheed Martin, Orlando, FL and Northrop Grumman, Los Angeles, CA).



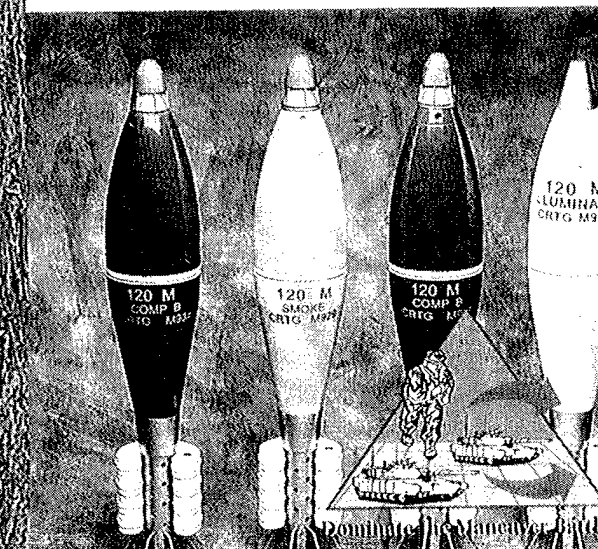
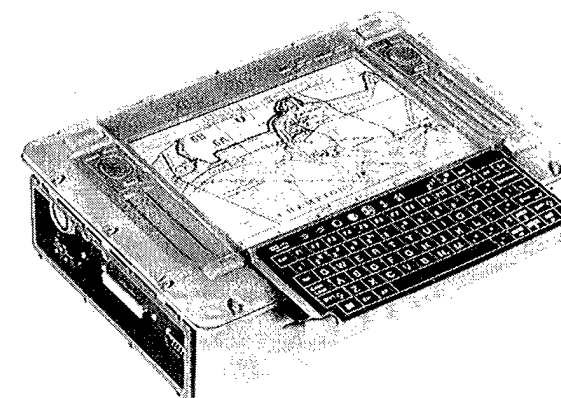
SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
<p>MISSION: The M113 Family of Vehicles (FOV) provides a highly mobile, survivable, and reliable tracked vehicle platform that is able to maintain pace with Abrams and Bradley-equipped units and is adaptable to a wide range of current and future battlefield tasks through the integration of specialized mission modules.</p>					
<p>CHARACTERISTICS:</p>					
<p>M113A3</p>					
<p>Length: 17.4 ft</p>					
<p>Width: 8.8 ft with side skirts</p>					
<p>Height: 6.7 ft</p>					
<p>Weight: 27,150 lbs combat loaded</p>					
<p>Power Train: 275 hp, 6V53T Detroit Diesel engine with Allison X200-4A hydrokinetic, automatic transmission</p>					
<p>Cruising Range: 300 mi</p>					
<p>Road Speed: 41 mph</p>					
<p>Crew: variable (maximum of 13)</p>					
<p>Armament: 50 caliber, M2A2 heavy machine gun</p>					
<p>Distribution: Corps-Company</p>					
<p>Current Models: M58 Smoke Generator Carrier, M548 Cargo Carrier, M577 Command Post Carrier, M901 Improved TOW Vehicle, M981 Fire Support Team Vehicle, M1059 Smoke Generator Carrier, M1064 Mortar Carrier, M1068 Standard Integrated Command Post System Carrier, OPFOR Surrogate Vehicle</p>					
<p>FOREIGN COUNTERPART: China: Type 577, Type YW-534; France: AMX VCI; Russia: BTR-50P, MTLB; United Kingdom: FV-432, FV-4333</p>					
<p>FOREIGN MILITARY SALES: Argentina, Botswana, Egypt, Greece, Israel, Lebanon, Norway, Portugal, Saudi Arabia, Spain</p>					
<p>PROGRAM STATUS: In FY96, the M113 Program Management Office continued procurement of A3 upgrade kits and the conversion of selected M113 platforms to the A3 configuration.</p>					
<p>PROJECTED ACTIVITIES: Selected M113s and M113 variants will continue to undergo conversion to the A3 configuration.</p>					
<p>PRIME CONTRACTOR: Anniston Army Depot (ANAD) (Anniston, AL) FMC (United Defense, LP) (Rosslyn, VA)</p>					
<p>* See appendix for list of subcontractors.</p>					

M113 Family of Vehicles (FOV)

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(Handheld Terminal Unit)
 LLC, OSSU, FDT
 n Data Systems
 phone: 605-532-5670



MISSION: The 120 mm mortar system provides organic indirect fire support capability to the maneuver unit commander.

CHARACTERISTICS: The 120 mm mortar system is a conventional smoothbore, muzzle-loaded mortar system that provides increased range, lethality, and safety compared to the WWII-vintage 4.2 in heavy mortar system it replaces in mechanized infantry, motorized, armored, and cavalry units. It is employed in both towed and carrier-mounted versions and fires a family of enhanced ammunition being produced in the United States.

Range: 7,240 m

Weight: 319 lb

Rate of fire: 16 rd/min for the first minute; 4 rd/min, sustained

Crew: 4 - carrier mounted (M1064); 5 - ground-mounted (M120)

Ammunition: High-Explosive, Smoke, Illumination, Full-Range Trainer

FOREIGN COUNTERPART: The US Army 120 mm mortar system was adapted from the Israeli Army's 120 mm mortar system. 120 mm smoothbore mortars are used by Denmark, Finland, France, Germany, Israel, and other allied armies. The Russian-developed counterpart is the M43 120 mm mortar, which has a range of 5,700 meters, weighs 602 pounds, and has a six-man crew. Other threat 120 mm mortars include turreted and extended range Dual Purpose Improved Conventional Munitions (DPICM) ammunition.

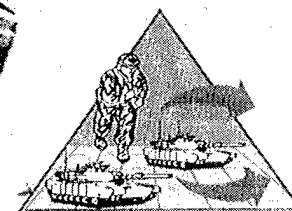
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The 120 mm mortar is produced at Watervliet Arsenal, NY. The towed system, M120, was fielded in September 1991. Fielding of the carrier-mounted system, M1064, is currently in progress and will be complete in 1998. The Army plans to replace all of the fielded 4.2-inch mortars with 120 mm mortar systems. The family of 120 mm enhanced mortar ammunition is currently being produced by Lockheed Martin Ordnance Systems. The M933/934 High Explosive, and M929 Smoke rounds have been type classified for production. Incorporation of the new M734A1 multioption fuze significantly improves lethality, reliability, and electronic countermeasure protection of these rounds. The current M23 Mortar Ballistic Computer will be replaced on a 1-for-1 basis with the M30 Improved Mortar Ballistic Computer in 1997. The M30 was developed from commercial hardware and will allow direct digital communications with the maneuver force via Advanced Field Artillery Tactical Data System protocols. The M303 subcaliber tube insert has been type classified and will allow mortar crews to perform live fire training with stockpiled 81 mm ammunition.

PROJECTED ACTIVITIES: A Full Range Training Round XM931, and an Infrared Illumination Round, XM983, are under development. The 120 mm mortar system's tremendous growth potential is being exploited through an Advanced Technology Demonstration (ATD) exploring the potential of Precision Guided Mortar Munitions (PGMM) at ranges between 12-15 km. Additionally, technology leading to an extended range DPICM munition that includes a self-destruct capability is being evaluated.

PRIME CONTRACTORS: KDI (Cincinnati, OH); Lockheed Martin Ordnance Systems (Burlington, VT); Milan Army Ammunition Plant (Milan, TN); Pine Bluff Arsenal, AK; Red River Army Depot (Texarkana, TX); Watervliet Arsenal (Watervliet, NY)

* See appendix for list of subcontractors.



SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
		EMD		

MISSION: The Multi-Purpose Individual Munition/Short Range Assault Weapon (MPIM/SRAW) provides a one-man, light-weight, shoulder fired, fire-and-forget, multiple purpose munition capable of defeating enemy forces in buildings, reinforced structures, bunkers and future light-weight armored vehicles.

CHARACTERISTICS: The MPIM/SRAW will consist of a disposable launcher/carry case equipped with a 2.5X telescopic sight that is compatible with current and future night vision devices. The shoulder launched missile will consist of a two stage, soft launch propulsion system with inertial guidance and an explosively formed penetrator with follow-through grenade warhead. The missile will be capable of being fired quickly from its carrying configuration and safely fired from enclosures.

- Weight: Less than 20 lb
- Range: 20 - 500 m (target dependent)
- Crew: 1
- Lethality: Capable of incapacitating personnel in bunkers and reinforced concrete/brick buildings, along with defeating modern and light armor.

FOREIGN COUNTERPART: No known foreign counterpart.

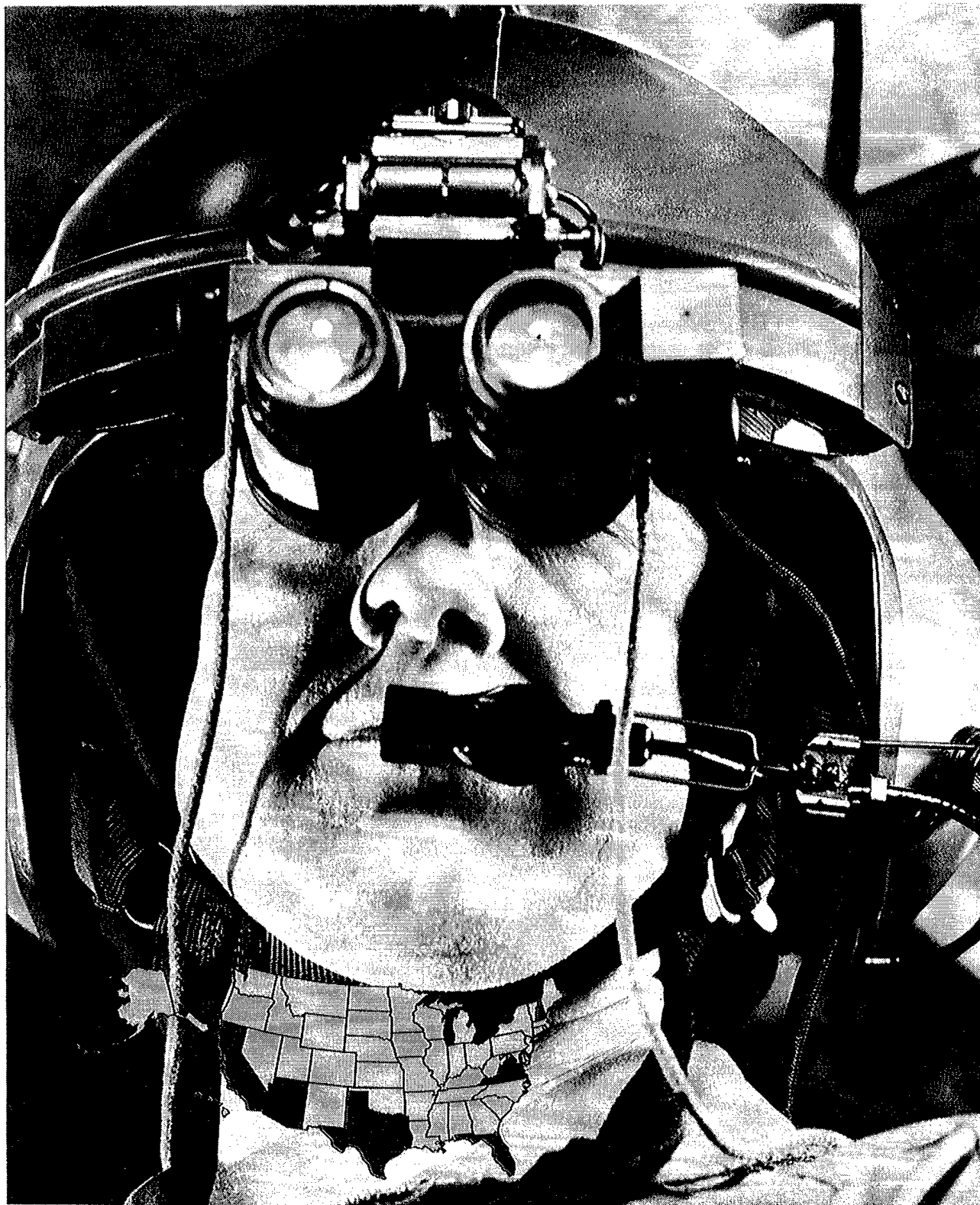
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The MPIM/SRAW program completed its Technology Demonstration program in September 1996. On 2 October 1996, Lockheed Martin Aeronutronic, Rancho Santa Margarita, California, was awarded a contract for Phase I of the MPIM/SRAW Engineering and Manufacturing Development (EMD) program. This is an 18-month risk reduction effort. Phase II is an option for a follow-on, 47-month hardware qualification and initial operational test and evaluation phase.

PROJECTED ACTIVITIES: Warhead Trade Studies and Wind Tunnel test plan complete: 2QFY97.
 Warhead Interface Control Document (ICD) complete: 3QFY97.
 Vibration Characterization & System ICD complete: 4QFY97.

PRIME CONTRACTOR: Lockheed Martin (Rancho Santa Margarita, CA)

* See appendix for list of subcontractors.



Win the Information War

Dominate the Maneuver Battle

PRODUCTION AND DEPLOYMENT

MISSION: Night Vision (NV) Image Intensification (I2), Laser, and Multi Sensor technologies provide today's soldier with the capability to operate more effectively and safely by day or night and under degraded battlefield conditions.

CHARACTERISTICS: The AN/AVS-6 Aviator's Night Vision Imaging System (ANVIS) is a lightweight, helmet-mounted, self-contained binocular system. The ANVIS provides image intensification for helicopter crew members to conduct night missions under minimal ambient light conditions. It is powered using existing aircraft power or a helmet-mounted battery pack. The AN/AVS-7 Aviator's Night Vision Imaging System Heads-Up Display (ANVIS/HUD) is designed to provide aviators with critical flight information superimposed on the visual image of the ANVIS. The system is electro-optical and provides both the pilot and copilot critical, real-time, high-resolution flight and navigational information. Its primary purpose is to enhance flight safety, ease the crew workload and heighten the crew members' situational awareness outside the cockpit. Future enhancement with a Flight Data Recorder is planned. The AN/PVS-7D Night-Vision Goggle is a light-weight, binocular goggle used by individual soldiers. The AN/PVS-7D uses a single passive third-generation image intensifier tube. It is used in combat, combat support and combat service support operations. Ancillary equipment include a helmet, protective eyecup, lens cover, compass and 3x magnifying lens. The AN/PVS-14 Monocular Night Vision Device is a third generation image intensification system designed to provide leaders of combat infantry units with a lightweight night vision device for use in observation and command & control. Interfaces with AN/PVS-7D head and helmet mount and 3x magnifier. Can also be mounted to small arms rail using TWS rail grabber. The AN/PVS-10 Night Vision Sniperscope is an integrated day/night sight for the M24 sniper rifle. The AN/PVS-10 provides the sniper the capability to acquire and engage targets during low and high ambient light conditions. The system utilizes third-generation I2 technology, mounts on the existing rail of the M24 and uses the same mil-dot reticle as the existing Leupold day scope. The magnification for day and night operation is 8.5X, and the system's maximum weight is 4.9 pounds. The **Lightweight Video Reconnaissance System (LVRS)** consists of a manportable Out Station and a vehicle mounted Base Station. The Out Station is used by surveillance or reconnaissance teams to capture, compress and transmit still frame images over military radios to the Base Station located at a higher echelon. The **Lightweight Laser Designator/Rangefinder (LLDR)** is an integrated vehicle mounted or manportable designator/rangefinder with day/night target location capability. It will replace older and heavier vehicle mounted systems and eliminate the need for separate systems performing the same target designation and rangefinding tasks. The **AN/PVS-6, Mini Eyesafe Laser Infrared Observation Set (MELIOS)** is a manportable, eye-safe laser rangefinder that accurately measures and displays range and vertical angle measurement data to selected targets. The **Target Location and Observation System (TLOS)** is a light-weight, self-contained, image intensified day/night sight that employs a near infrared low energy laser to actively acquire direct view and electro-optic targets.

FOREIGN COUNTERPARTS: I2, Laser, and Thermal devices are produced in many countries.

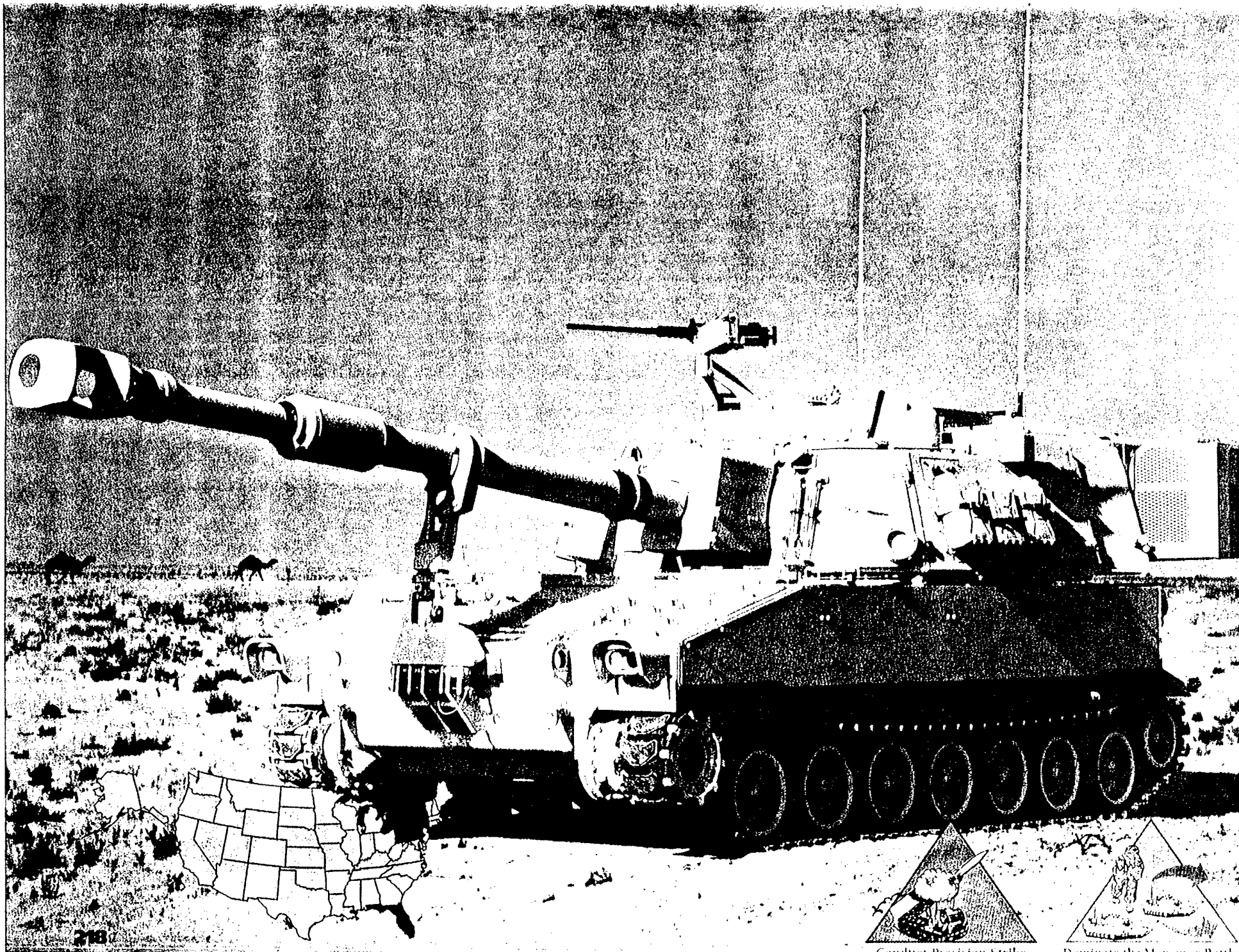
FOREIGN MILITARY SALES: AVS-6(V)1&2: Bahrain, Colombia, Greece, Jordan, Mexico, Saudi Arabia, Taiwan, Thailand, United Arab Emirates, PVS-6: Baltic States (Latvia), Saudi Arabia; PVS-7: Italy, Kuwait, Mexico, Portugal, Saudi Arabia, Taiwan

PROGRAM STATUS: Two multiyear contracts are in place (FY93-97) for AN/AVS-6, AN/PVS-7B, AN/PVS-7D and associated spare parts. ANVIS/HUD production deliveries began in FY95.

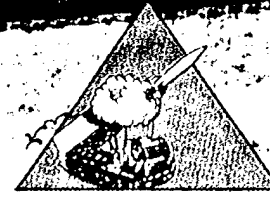
PROJECTED ACTIVITIES: FY97 single award of a multi-year contract for AN/AVS-6, AN/PVS-7D, AN/PVS-14 and tubes.

PRIME CONTRACTORS: ITT (Roanoke, VA) Litton Industries (Garland, TX, Tempe, AZ & Orlando, FL)
Texas Instruments (McKinney, TX) TRACOR Aerospace, Inc. (Austin, TX)

*See appendix for list of subcontractors.



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Conduct Precision Strike



Dominate the Maneuver Battle

MISSION: The Paladin provides the primary indirect fire support to heavy divisions and armored cavalry regiments.

CHARACTERISTICS: Like the earlier M109 models, the Paladin is a fully tracked, armored vehicle with a 155 mm howitzer. The Paladin includes an onboard ballistic computer and navigation system, secure radio communications, an improved cannon and gun mount, automatic gun positioning, automotive improvements, improved ballistic and nuclear-biological-chemical protection, driver's night vision capability, and built-in test equipment. The Paladin has improved responsiveness, survivability, lethality, and reliability compared to the earlier M109s.

Range: 30 km (with rocket-assisted projectile)
24 km (with unassisted projectile)

Response time: Less than 60 seconds

Rate of fire

Maximum: 4 rd/min for 3 min

Sustained: 1 rd/min

Main armament: M284 155 mm cannon

Secondary armament: .50 caliber machine gun

Weight: 32 ton (combat loaded)

FOREIGN COUNTERPART: France: 155 GCT
Germany: PzH 2000
Israel: Slammer
United Kingdom: AS90

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: Low-rate production began in September 1991 and achieved a First Unit Equipped in April 1993. A full-rate production contract was awarded in April 1993. 307 howitzers have been delivered to date, all at least two months ahead of schedule. The Army will acquire 914 Paladins as a product improvement of the current M109A2/A3 howitzer. A portion of the remaining M109 howitzer fleet will receive the M109A5 upgrade, which includes some automotive and crew nuclear-biological-chemical protection improvements and Paladin's M284 cannon and M182 gun mount.

PROJECTED ACTIVITIES: Production will continue during 1997 and through 1998.

PRIME CONTRACTOR: FMC Corp. (United Defense, LP) (Chambersburg, PA; York, PA)

* See appendix for list of subcontractors.

1st Gen

WFOV $3.4^{\circ} \times 6.8^{\circ}$

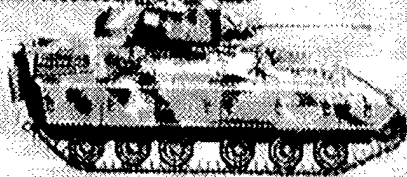
NFOV $1.1^{\circ} \times 2.2^{\circ}$



WFOV $7.5^{\circ} \times 15^{\circ}$

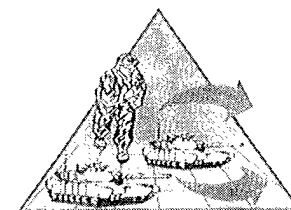
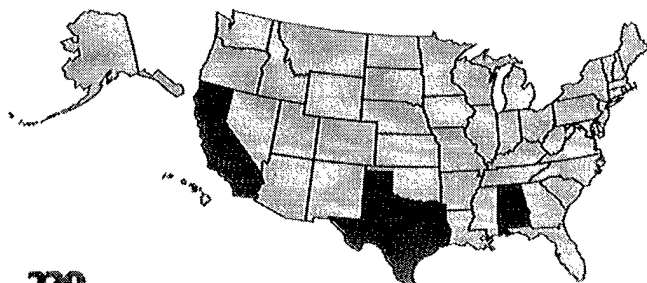
NFOV $2.5^{\circ} \times 5^{\circ}$

2nd Gen



WFOV $7.5^{\circ} \times 13.3^{\circ}$

NFOV $2.0^{\circ} \times 3.6^{\circ}$



SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
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MISSION: Second Generation Forward Looking Infrared (FLIR) will provide the Abrams Main Battle Tank, Bradley Fighting Vehicle, and Long Range Advanced Scout Surveillance system with a leap ahead target acquisition capability during all atmospheric and obscurant conditions, and permit them to "see the same battlespace." One goal of this program is to develop and produce a common FLIR to maximize economies of scale during production, and minimize life cycle costs.

CHARACTERISTICS: This new "common use" FLIR is the Army's first major Horizontal Technology Integration (HTI) program. One of the Army's key objectives in its quest to "Own The Night" is the Horizontal Technology Integration of Second-Generation FLIR technology in a number of new and existing platforms.

The concept is elegant in its simplicity. By using a common thermal sensor known as a B Kit that can be integrated into any candidate platform, the user community will be able to "see the same battlespace" and have a broad overmatch to potential adversary capabilities. The linkage between the B Kit and the perspective sights will be system specific platform links called A Kits.

The program, which entered engineering and manufacturing development in July 1994, will initially upgrade two candidate platforms selected by Army leadership, the M1A2 and M2A3. The current platform sight applications are: M1A2 Gunner's Primary Sight, M1A2 Commander's Independent Thermal Viewer, M2A3 Improved Bradley Acquisition system and Commander's I Independent Viewer, and the Long Range Advanced Scout Surveillance System (LRAS3). Potential exists for other Army programs such as Apache, Comanche, and future armored vehicles to benefit from HTI.

The present system concept will allow adaptation of this common sensor to any new platform application desired by Army leadership. In addition, this system will provide a battlespace observation edge for U.S. forces well into the next century. Commonality of FLIRs in multiple platforms facilitates development and fielding of future upgrades such as image fusion, automatic target recognizers, and target trackers.

FOREIGN COUNTERPART: No known foreign counterparts.

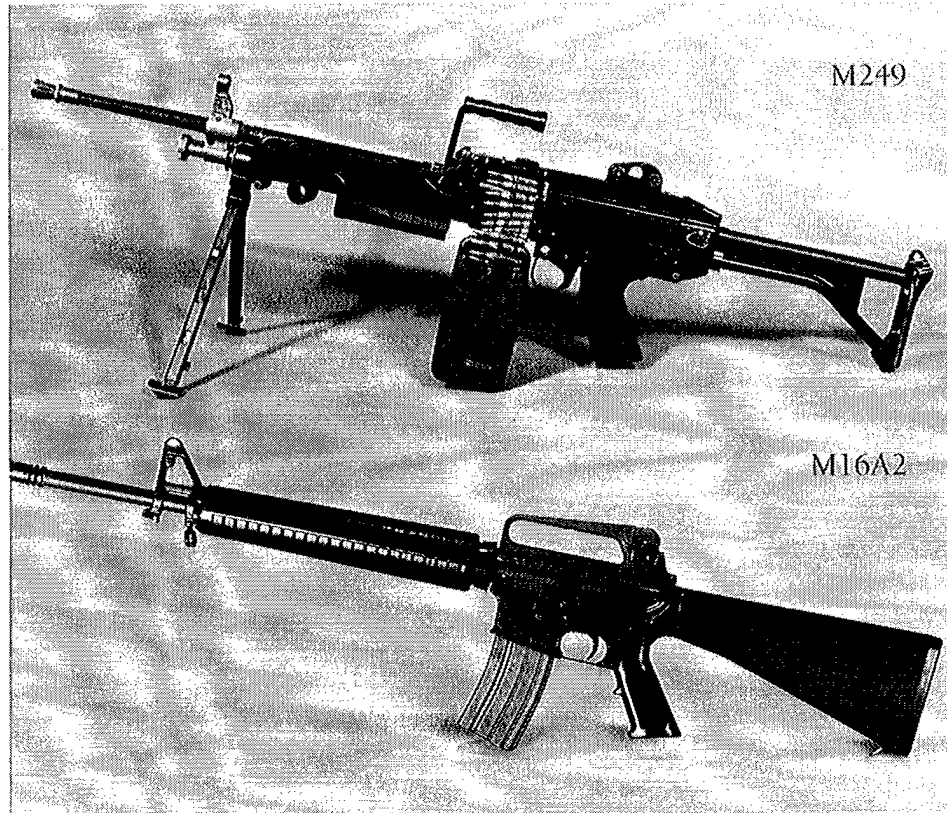
FOREIGN MILITARY SALES: No foreign military sales. However SGF has potential for applications in many NATO aircraft and ground tactical and combat vehicles.

PROGRAM STATUS: Cost plus award fee, Engineering and Manufacturing Development contract for the HTI SGF was awarded 7 July 1994.

PROJECTED ACTIVITIES: M2A3 & M1A2 LRIP Award - 2QFY97.

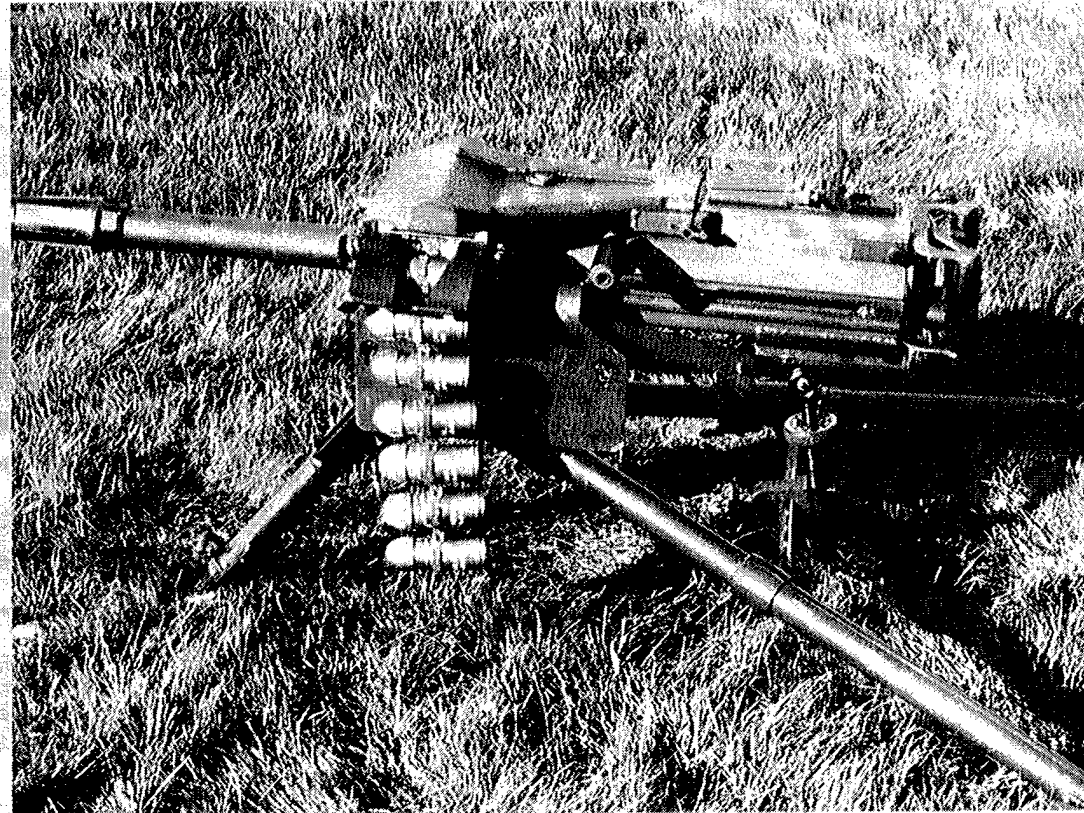
PRIME CONTRACTOR: Texas Instruments (McKinney, TX)

*See appendix for list of subcontractors.

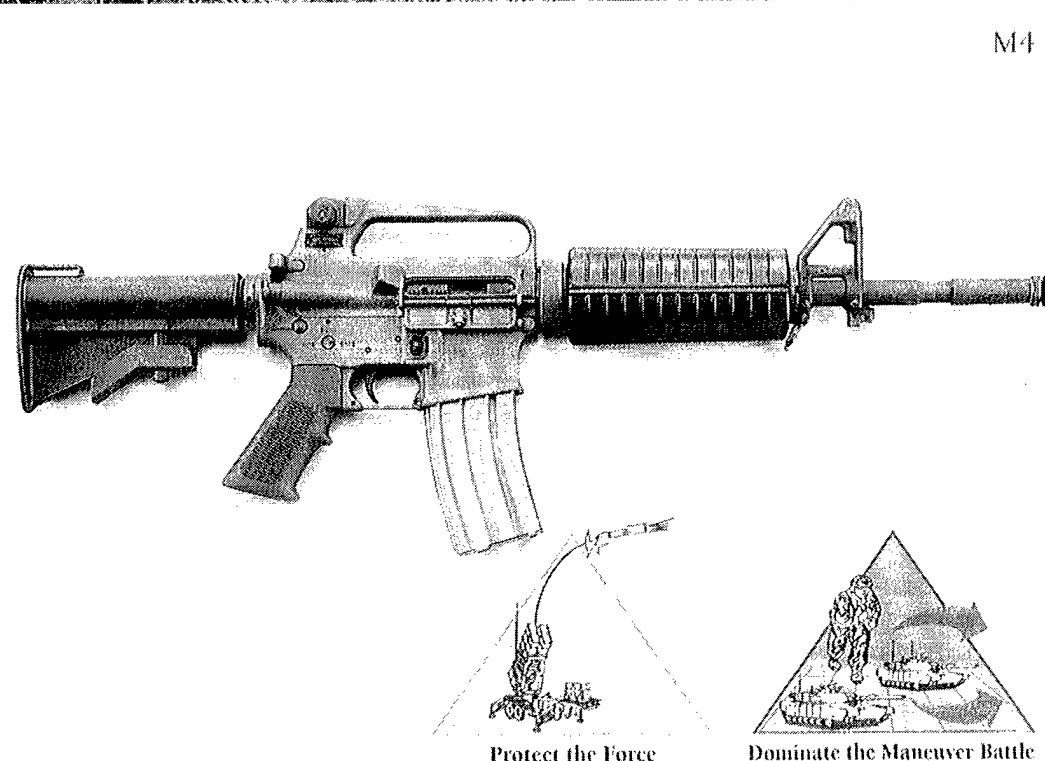


M249

M16A2



M240B2



M4

Protect the Force

Dominate the Maneuver Battle

MISSION: Small Arms reassure, deter, and if necessary, compel adversaries by providing a capability for individuals and small units to engage targets with accurate, lethal, direct fire.

CHARACTERISTICS: **M4 Carbine:** The M4 is a more compact version of the M16A2 rifle with a collapsible stock. It provides the individual soldier operating in close quarters the capability to engage targets at extended range with accurate, lethal fire. It achieves over 85% commonality with the M16A2 Rifle and will replace all .45 caliber M3 submachine guns and selected M9 pistols and M16 series rifles.

M16A2 Rifle: The M16A2 is a lightweight, air-cooled, gas-operated, low-impulse rifle. An improved version of the M16A1 it is replacing, the M16A2 incorporates improvements in sight, pistol grip, stock, and overall combat effectiveness. Accuracy is improved by incorporating an improved muzzle compensator, three-round burst control, and a heavier barrel, and by using the heavier NATO standard ammunition, which is also fired by the Squad Automatic Weapon.

M249 Squad Automatic Weapon (SAW): The M249 is a lightweight, gas-operated, one-man-portable automatic weapon capable of delivering a large volume of effective fire at ranges up to 800 meters. The basis of issue is one per soldier designated to fire in the automatic rifle role in all types of units. It is scheduled to replace the M60 7.62 mm medium machine gun in certain units.

M240B Medium Machine Gun: The M240B is a ground mounted, gas-operated, crew served machine gun. This highly reliable, 7.62 mm machine gun delivers more energy to the target than the smaller caliber M249 SAW. It will be issued to infantry, armor, and combat engineer units that require medium support fires and will replace the ground-mounted M60 series machine guns currently in use.

MK19-3 40 mm Grenade Machine Gun: A self-powered, air-cooled, belt-fed, blowback operated weapon, the MK19-3 is designed to deliver accurate, intense, and decisive firepower against enemy personnel and lightly armored vehicles. It is scheduled to replace selected M2 Heavy machine guns in selected units and will be the primary suppressive weapon for combat support and combat service support units. The MK19-3 is mounted on the HMMWV, M113 FOV, 5-ton trucks, and selected M88A1 recovery vehicles.

	M4	M16A2	M249	M240B	MK19-3
Caliber:	5.56 mm	5.56 mm	5.56 mm	7.62 mm	40 mm
Weight:	5.65 lb	8.9 lb	16.3 lb	27.6 lb	72.5 lb
Max effective range:	500 m	550 m	800 m	1,100 m	2,200 m (area target)

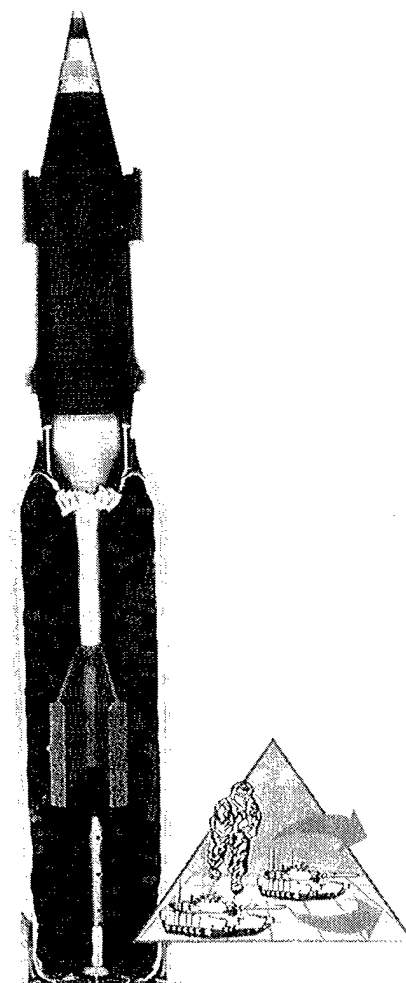
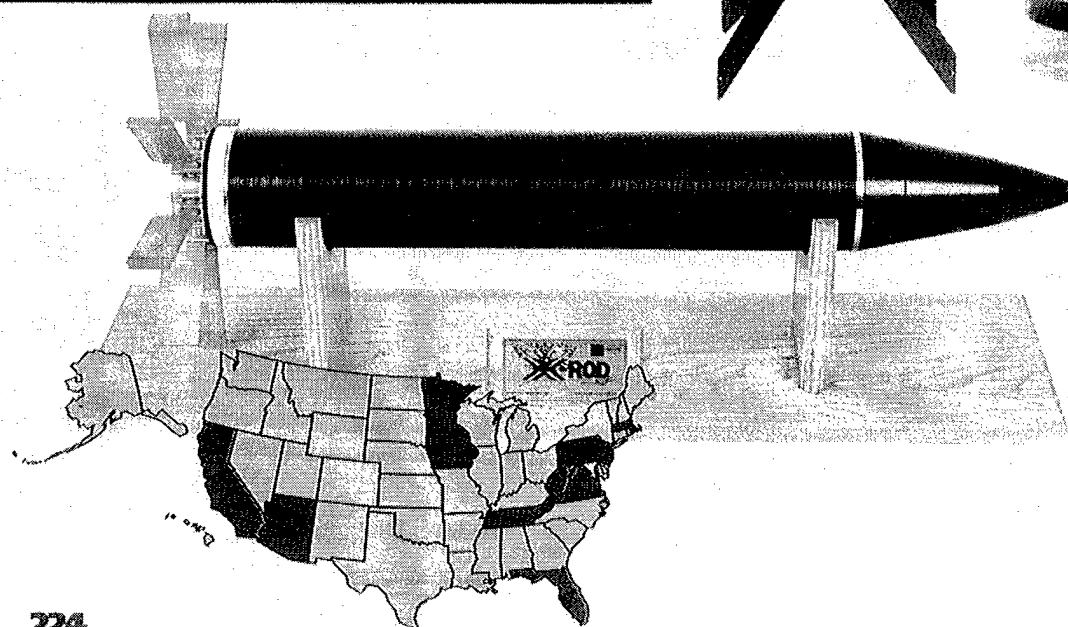
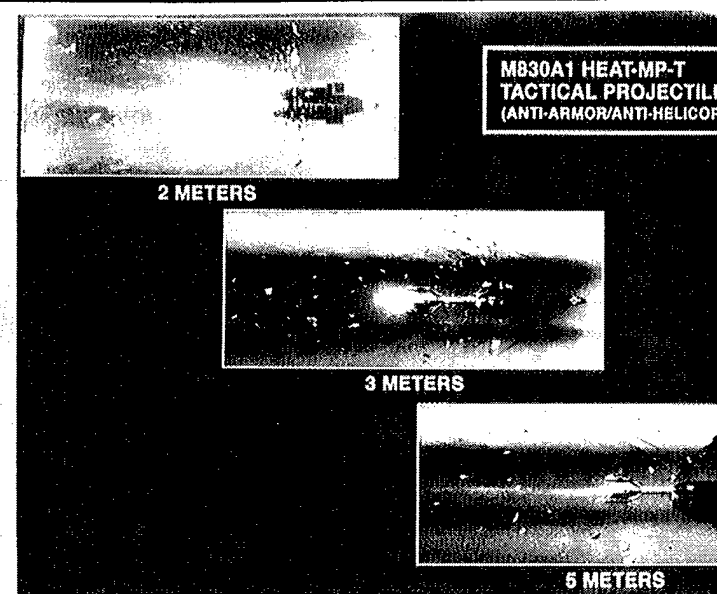
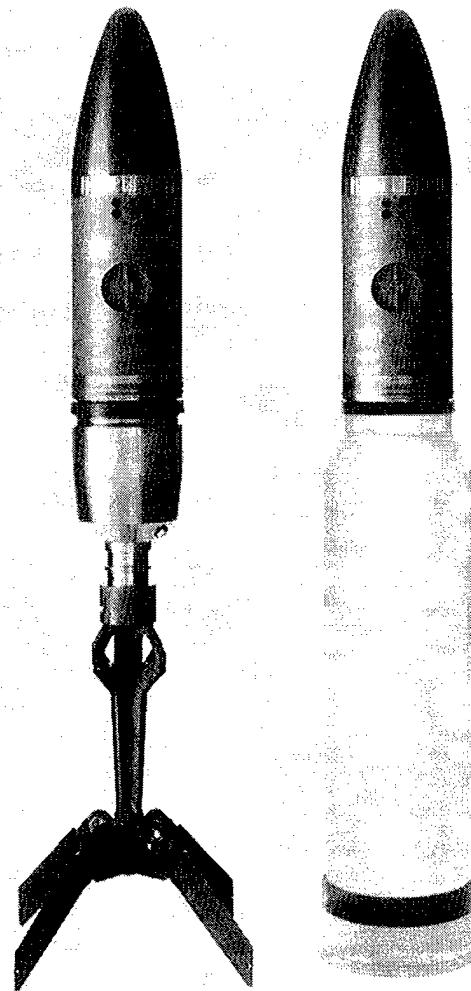
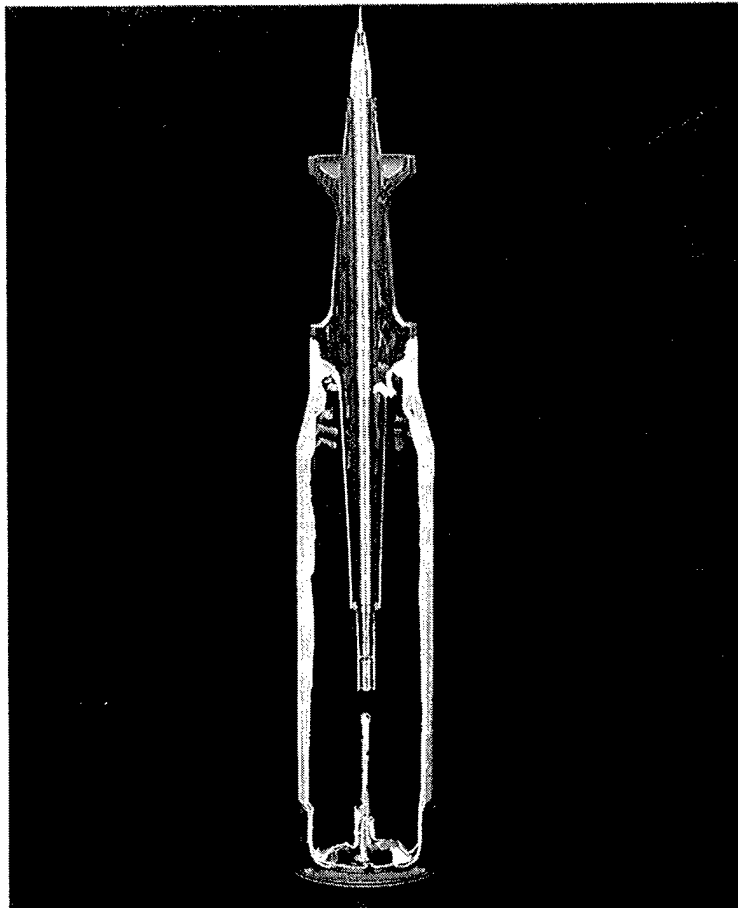
FOREIGN MILITARY SALES: Numerous foreign countries purchase US small arms.

PROGRAM STATUS: All are currently in series production and fielding.

PRIME CONTRACTORS:

M4 Carbine:	TBD
M16A2 Rifle:	FN Manufacturing Inc. (Columbia, SC); Colt's Manufacturing Inc. (Hartford, CT)
M249 Squad Automatic Weapon:	FN Manufacturing Inc. (Columbia, SC)
M240B Medium Machine Gun:	FN Manufacturing Inc. (Columbia, SC)
MK19-3 Grenade Machine Gun:	Saco Defense Inc. (Saco, ME)

* See appendix for list of subcontractors.



SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
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MISSION: The 120 mm family of tank ammunition is fired from the M256 cannon on the M1A1/M1A2 tank. There are five basic cartridge types: Kinetic Energy (KE), Armor Piercing, Fin Stabilized, Discarding Sabot-Tracer (APFSDS-T - M829 series); High Explosive Anti-Tank (HEAT-T - M830); Multi-purpose Anti-Tank (MPAT - M830A1); Smart Target Activated Fire-and-Forget (XM943) and Tank Extended Range Munition-Kinetic Energy (XM1007). The Armament Enhancement Program (AEI) provides a family of ammunition designed to defeat future threats. The M829 series rounds, the MPAT - M830A1, STAFF - XM943 and TERM-KE-XM1007 all fall under the AEI umbrella.

CHARACTERISTICS: **APFSDS-T:** One-piece depleted uranium penetrator, combustible cartridge case, discarding sabot— M829, M829A1, M829A2, M829E3.

HEAT-T: Shaped charge warhead, combustible cartridge case - M830

MPAT: Shaped charge warhead, combustible cartridge case. Saboted projectile with manually selectable air/ground switch with RF proximity sensor for self-defense anti-helicopter capability—M830A1.

STAFF: Smart Target Activated Fire-and-Forget (XM943) munition with explosively formed penetrator (EFP) for top attack defeat of armor targets in defilade.

TERM-KE: Tank Extended Range Munition (XM1007)(previously called X-ROD), soft-launch, rocket-boosted, terminally guided, kinetic energy munition for anti-armor frontal defeat in line-of-sight engagements, with potential top attack to non line-of-sight. Capability against moving/maneuvering targets.

FOREIGN COUNTERPART: NATO tanks employ similar types of KE ammunition, however, the MPAT, STAFF and TERM-KE have no similar counterparts fielded in the world. Russian-designed tanks fire KE, high explosive fragmentation ammunition, and anti-tank guided missiles.

FOREIGN MILITARY SALES: AEI ammunition is strictly controlled for US Army use only. The only exception is M829 which has been sold to Egypt and Saudi Arabia

PROGRAM STATUS: The following rounds have been fielded to the Army: M829, M829A1, M829A2, M830, and M830A1. The M829A2, and M830A1 are in production now. A four year, sole source multi-year contract for the M829A2 was awarded in FY95. The XM943, STAFF cartridge is in the Engineering and Manufacturing Development phase, while the M829E3 and the XM1007 TERM-KE are in the initial stages of development.

PROJECTED ACTIVITIES: Multi-year production contracts for M829A2 will continue through FY98, as will continued development of STAFF, and M829E3. FY97 is also the last planned production buy for the M830A1.

PRIME CONTRACTOR: M830A1, XM943: Alliant TechSystems (Brooklyn Park, MN)
 XM1007: Alliant Techsystems (Clearwater, FL)
 M829A2, M830: Olin Corp. (St. Petersburg, FL)

* See appendix for list of subcontractors.



Thermal Weapon Sight (TWS)



Medium Weapons TWS



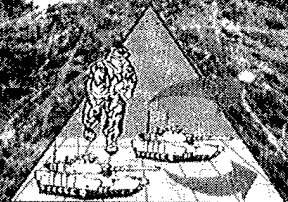
Light Weapons TWS



Heavy Weapons TWS



TWS P31



MISSION: The AN/PAS-13, Thermal Weapon Sight (TWS) allows the US Army Infantry Warfighter the ability to continue day or night operations during degraded visual conditions caused by smoke, fog or dust. These individual- and crew- served weapon gunners will truly “own the night” with this unparalleled capability.

CHARACTERISTICS: The TWS allows the soldier to see deep into his battlefield, increases surveillance and target acquisition range, and penetrates obscurants, day or night. The Thermal Weapon Sight family will replace the image intensifier night sights currently in use for small arms. The TWS is a second generation Forward Looking Infrared (FLIR), is digital battlefield compatible, and provides a standard video output for training, image transfer, or remote viewing. The P3I TWS will incorporate a rangefinder, compass, vertical angle, cant measurement, and aimpoint adjustment for ballistic solution. TWS is presently in limited procurement.

	Range (in meters)	Weight (in pounds)	Field of View (in degrees)	Weapons Supported
Light Wpns TWS:	550	4.3	15	M16, M4,M203, M136
Medium Wpns TWS:	1100	4.5	9 & 15	above plus M249, M60
Heavy Wpns TWS:	2200	5.0	3 & 9	M2, MK19, M24

FOREIGN COUNTERPART: No known foreign counterparts.

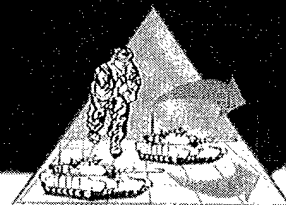
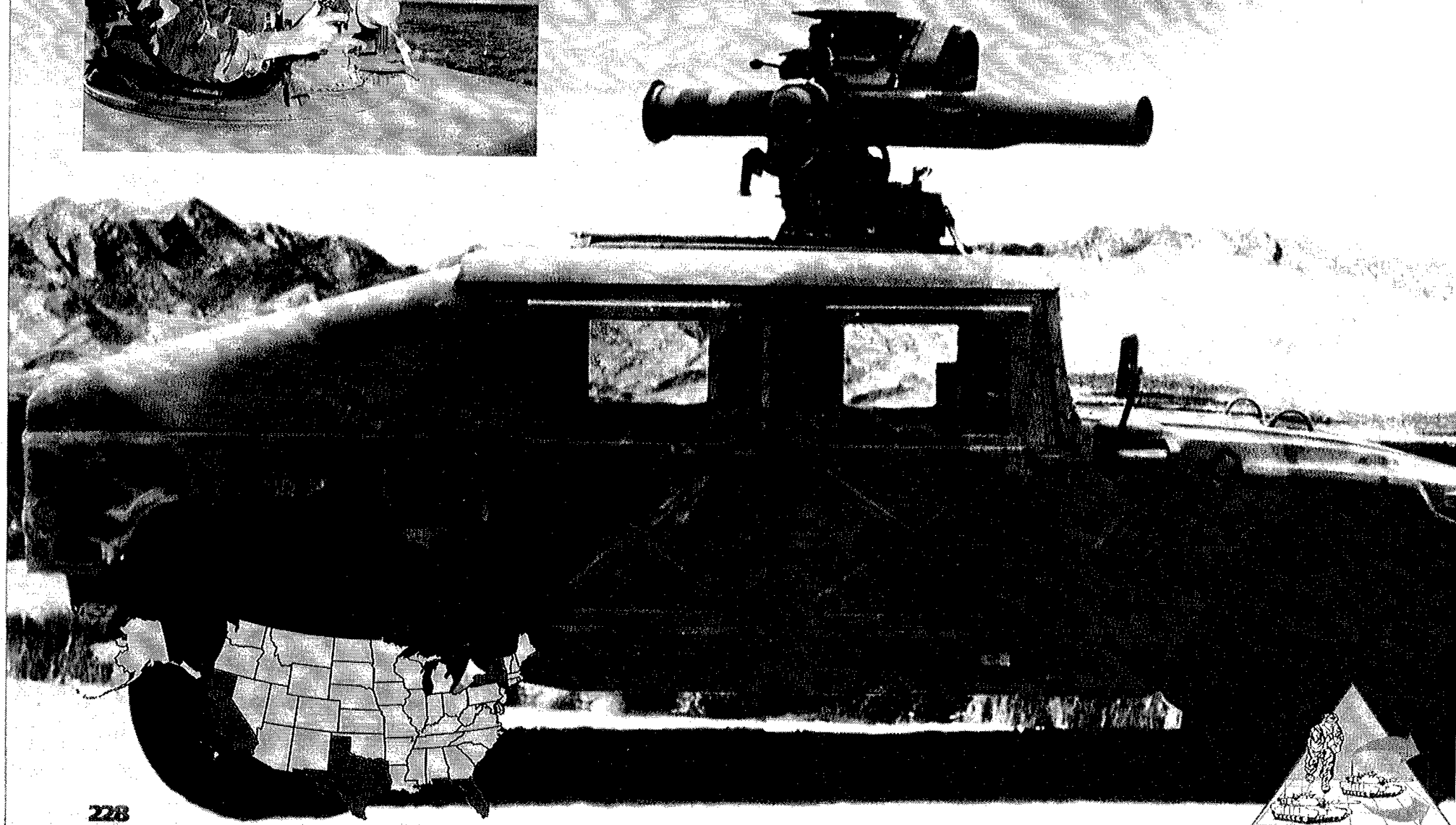
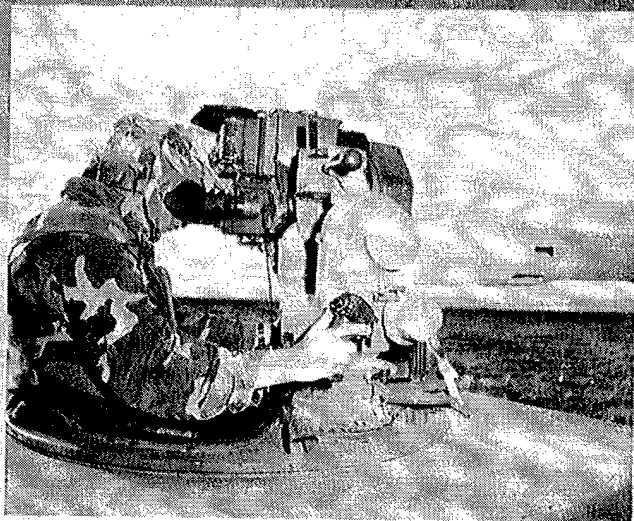
FOREIGN MILITARY SALES: No foreign military sales. However, TWS has considerable potential for use by NATO countries interested in Rationalization, Standardization and Integration.

PROGRAM STATUS: Currently in limited production. Type Classification Standard in 2QF97.

PROJECTED ACTIVITIES: Initial fielding scheduled for 2QFY97.

PRIME CONTRACTOR: General Motors (Hughes Aircraft Company) (El Segundo, CA)

*See appendix for list of subcontractors.



EMD

MISSION: The TOW Improved Target Acquisition System (ITAS) is a materiel change to the current ground TOW 2 weapon system for first-to-deploy light forces. ITAS will increase target acquisition ranges and have the ability to fire all configurations of TOW missiles while allowing room for growth for follow-on missiles.

CHARACTERISTICS: The ITAS will be fielded at battalion level, replacing TOW 2 in light infantry units. The ITAS modification kit consists of an integrated (Day/Night Sight with Laser Rangefinder) Target Acquisition Subsystem, Fire Control Subsystem, Battery Power Source, and modified Traversing Unit. The ITAS will operate from the High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) and the dismount tripod platform.

FOREIGN COUNTERPART: No known direct foreign counterpart. Hughes Aircraft Company (HAC) Spanish-assembled Light Weight Launcher is a somewhat similar but less capable system.

FOREIGN MILITARY SALES: Based on the number of fielded TOW systems, foreign military sales potential is high.

PROGRAM STATUS: ITAS, after recently completing qualification and operational testing (4QFY96), is currently conducting a reliability growth program which has extended the EMD period of performance in accordance with Milestone IIIA Army Decision Memorandum. ITAS LRIP contract was awarded 30 September 1996 with a production quantity of 25 units.

PROJECTED ACTIVITIES: Reliability growth effort directed during the LRIP Decision is currently being conducted. LRIP is underway and will include Production Qualification Test.

PRIME CONTRACTOR: Texas Instruments (McKinney, TX)

*See appendix for list of subcontractors.



MISSION: The TOW (Tube-Launched, Optically Tracked Wire Command-Link Guided) missile is a long-range, heavy anti-tank system designed to attack and defeat armored vehicles other targets, such as field fortifications.

CHARACTERISTICS: The TOW is found at battalion level and is mounted on the Bradley Fighting Vehicle System (BFVS), the Improved TOW Vehicle (ITV), the High Mobility Multi-purpose Wheeled Vehicle (HMMWV), and the AH-1S Cobra Helicopter. The system consists of a tripod, traversing unit, missile guidance set, launch tube, optical sight, battery assembly, and any of the five missile variations. The system also includes a thermal sight that provides a capability for operations at night, in reduced visibility, and in a countermeasure environment. The missiles are all-up rounds encased in a disposable container.

	MISSILE	
	TOW 2A	TOW 2B
Missile weight	47.1 lb	49.8 lb
Missile length	46.1 in	46.1 in
Reliability:	96%	98%
Min range:	65 m	200 m
Max range:	3750 m	3750 m

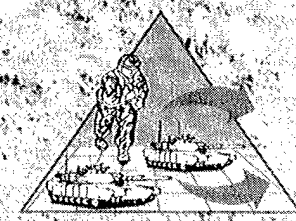
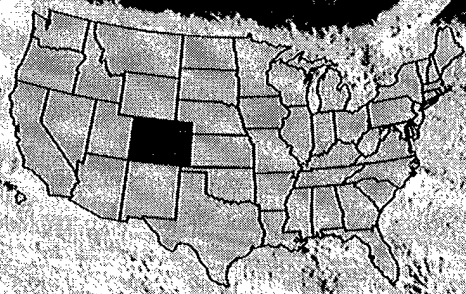
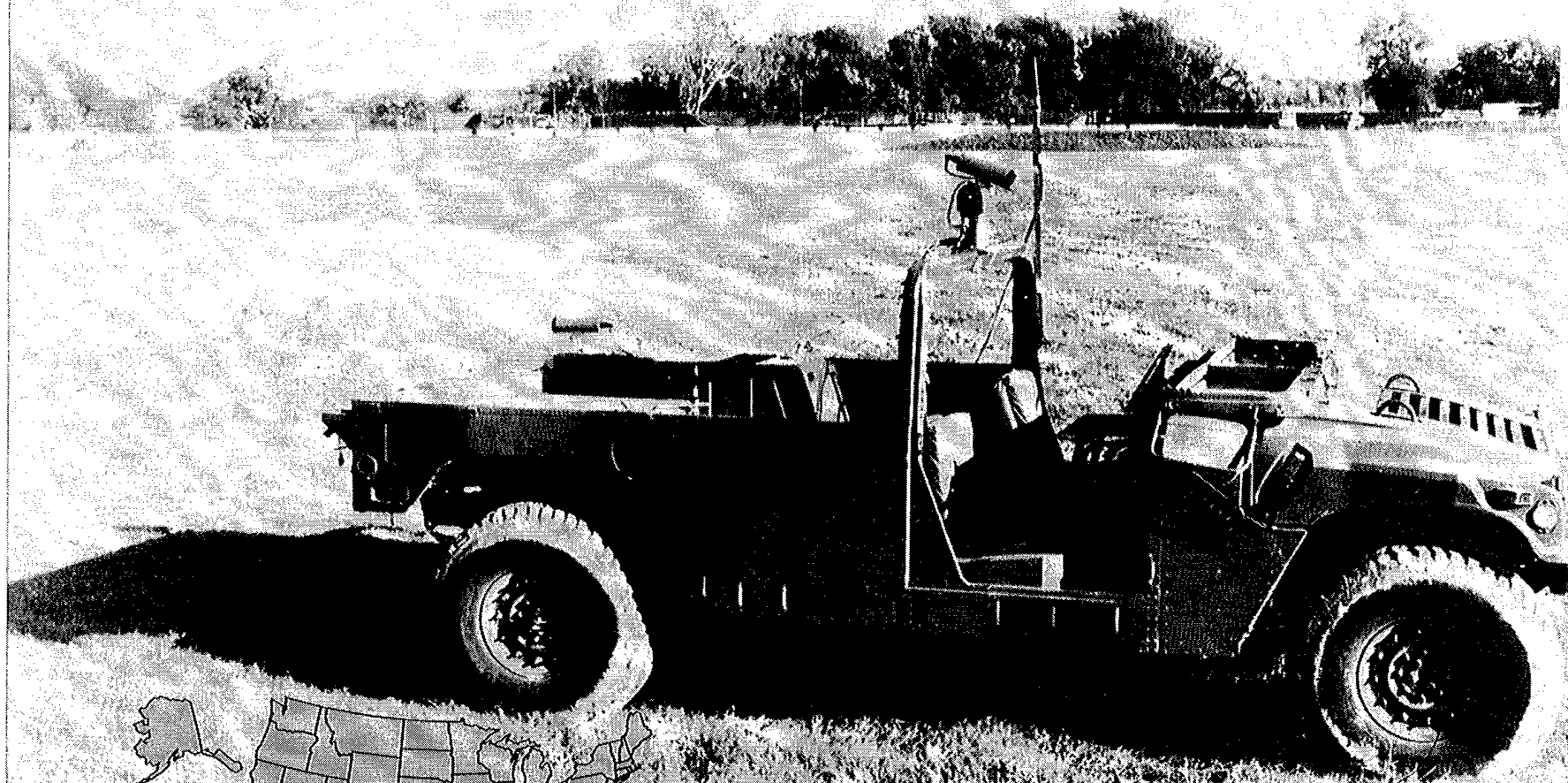
FOREIGN COUNTERPART:		
France/Germany	HOT 2	
France/Germany	MISSION	
Russia	AT-4/5/6	
Sweden	BOFORS BILL	
United Kingdom	MILAN 2	

FOREIGN MILITARY SALES: The TOW is currently in use by more than 46 other nations as their primary heavy anti-armor weapon system.

PROGRAM STATUS: The TOW Weapon System entered its Production and Deployment phase with the Basic TOW in 1970. Since that time, there have been five variations of the missile and two variations of the TOW subsystem. The TOW 2B replaced the TOW 2A as the standard production missile in 2QFY92 and will join the more than 100,000 missiles and 14,000 platforms already in the field.

PROJECTED ACTIVITIES: Continue TOW 2B missile production to complete Army buys, TOW 2A and 2B Foreign Military Sales.

PRIME CONTRACTOR: General Motors (Hughes Missile Systems Company) (Tucson, AZ)



SCIENCE AND TECHNOLOGY	DEVELOPMENT	DEMO/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
	CONCEPT				

MISSION: The Vehicle Teleoperation Capability (VTC) will provide a capability to easily transform existing vehicles into teleoperated vehicle systems to operate in extremely hazardous situations to reduce loss of life and increase vehicle survivability.

CHARACTERISTICS: The VTC will be a kit which can be easily installed on existing vehicles to enable teleoperation of the vehicle and its payload. Once installed, the kit will allow easy transition between manned and unmanned configurations, allowing the commander additional options when conducting operations in extremely hazardous situations. A high degree of commonality will be required to reduce program procurement and support costs. Prototype kits have been installed for demonstration programs on D7G bulldozers for beachhead mine clearing, M1 chassis for obstacle and minefield breaching, and HMMWVs for mine detection and countermeasures through the use of acoustic, seismic, and IR signatures acting as decoys to smart mines.

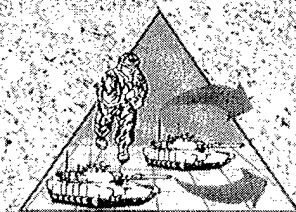
FOREIGN COUNTERPART: No known foreign counterpart.

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The VTC is currently in a combined Concept Exploration/ Program Definition and Risk Reduction phase of development. The Standardized Teleoperation System—the core teleoperation capability for VTC programs—is currently installed on seven turret-less M-60 chassis (Panther) and is being used for countermine operations in Bosnia.

PROJECTED ACTIVITIES: Technical testing will be initiated in 2QFY97. Milestone I/II is scheduled for 4QFY97. Robotics Battle Lab Experiment with Terrain Dominance Battle Lab is planned for late FY97.

PRIME CONTRACTOR: Omnitech Robotics (Englewood, CO)



MISSION: The Volcano system is a rapidly deployed mine system that can be delivered from a UH-60 helicopter and a host of ground vehicles. The system can be employed offensively and defensively to delay enemy movement, isolate the battlefield and reinforce friendly fires.

CHARACTERISTICS: The delivery system consists of a dispenser control unit, one to four launcher racks and unique mounting hardware. Each launcher rack is capable of holding 40 mine canisters with a 5:1 mix of anti-tank and anti-personnel mines. The air system is capable of deploying 960 mines in less than 30 seconds.

FOREIGN COUNTERPARTS: France: Minotaur
Germany: Skorpion
Italy: Istrice
U.K.: VLSMS

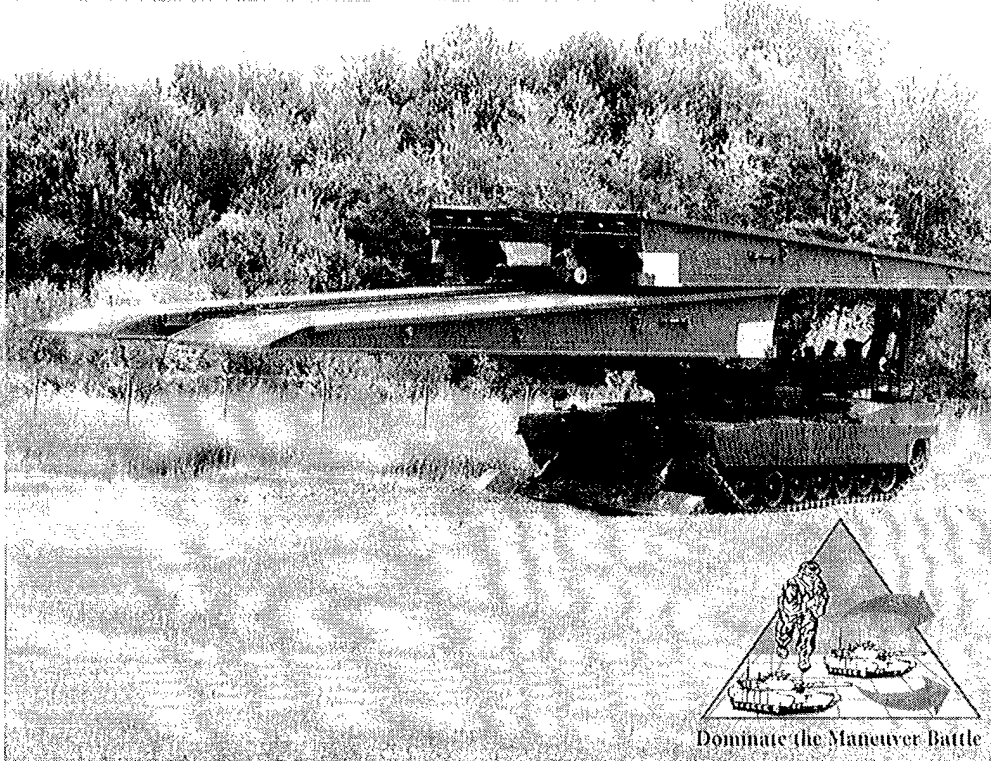
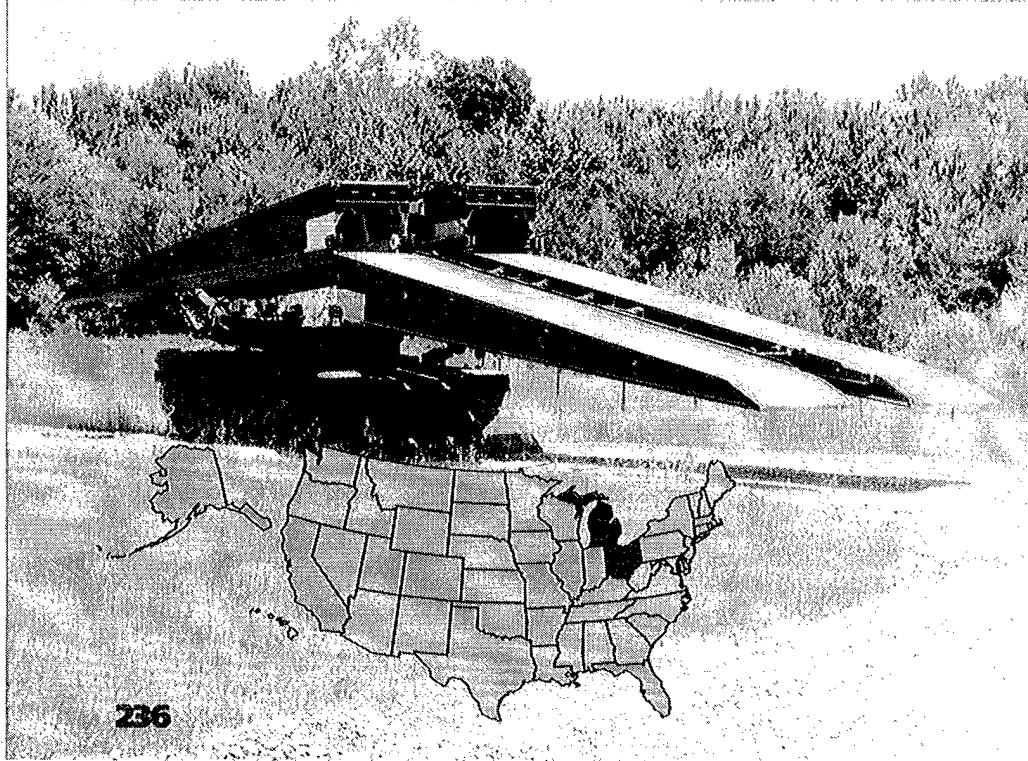
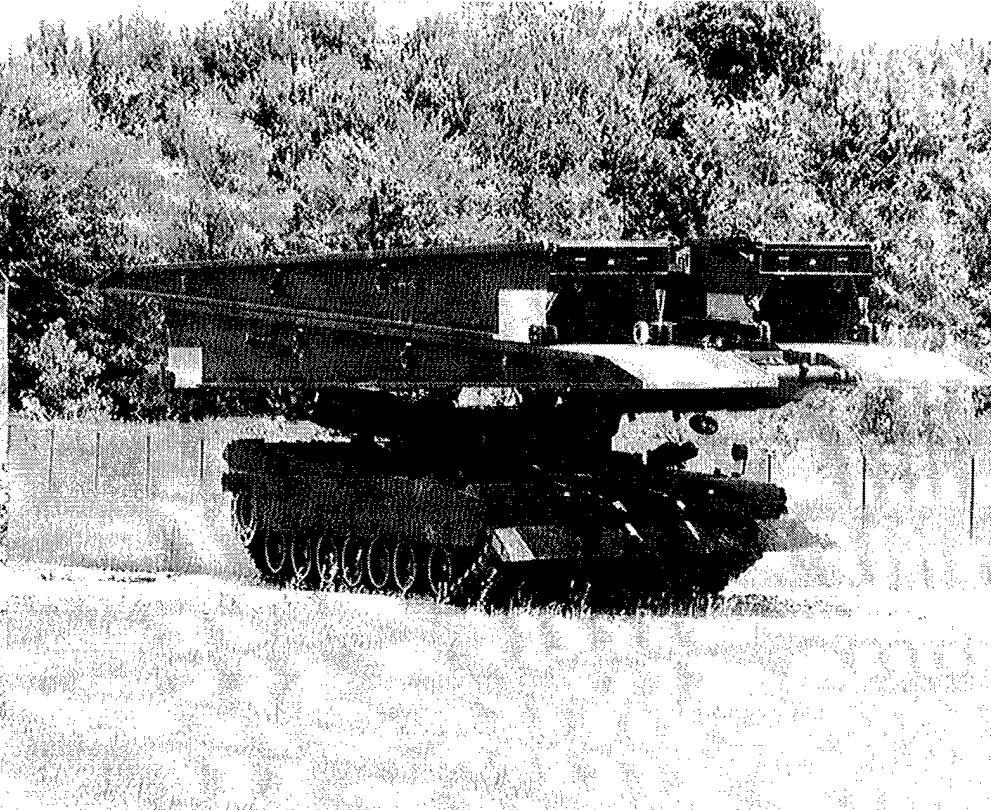
FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The 5-ton truck delivery system was type classified in January 1989, the M548A1 version was type classified in October 1991 and the air version was type classified in June 1991. Troop NET of the 5-ton and the M548A1 are ongoing and troop NET of the air system started 4QFY95. A new improved anti-tank mine (MSEP) was included in the FY94 mine buy. The last Volcano production buy occurred in FY95.

PROJECTED ACTIVITIES: Deliveries of the improved M89A1 canisters began October 1996 and continue through June 1997.
Deliveries of the M548 mounted Dispenses will occur between August 1996 and July 1997.
Deliveries of the air system will be completed by March 1997.
Deliveries of the 5-ton Truck Dispenses will be completed by July 1997....

PRIME CONTRACTOR: Alliant Techsystems (Edina, MN)
Intellitech (Deland, FL)

* See appendix for list of subcontractors.



SCIENCE AND TECHNOLOGY	CONCEPT	DEM/VAL	EMD	PRODUCTION AND DEPLOYMENT	OPERATIONS AND SUPPORT
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MISSION: The Wolverine provides assault bridging support for forward, heavy-maneuver forces.

CHARACTERISTICS: The Wolverine launcher is mounted on an M1A2 Abrams System Enhancement Program (SEP) chassis and is operated by a two-man crew. The bridge is 26 meters long and can span gaps up to 24 meters. It will support an MLC 70 loading crossing at 16 kph. The bridge is launched from under armor in 5 minutes and retrieved in less than 10 minutes.

The Wolverine will increase maneuver force mobility by allowing units to transit such gaps as tank ditches, road craters, and partially damaged bridge sections. The current Armored Vehicle Launched Bridge (AVLB) only supports Abrams tank units using a caution crossing at reduced gap length (15 meters) and reduced crossing speed.

FOREIGN COUNTERPART:

China:	Type 84
France:	AMX (AVLB)
Germany:	BLG-60; Biber
Russia:	MTU-20; MTU-72
Slovakia:	MT-55
South Korea:	K-1
United Kingdom:	Chieftain

FOREIGN MILITARY SALES: No foreign military sales.

PROGRAM STATUS: The program is currently in Engineering and Manufacturing Development (EMD). The contract for Phase II of EMD was awarded in January 1994. Phase II includes the design, fabrication, and integration of the bridge system onto the Abrams chassis. Full-up system testing began 3QFY96. Prototype delivery occurred in June and July 1996 to support Production Qualification Testing and Logistics Demonstration.

PROJECTED ACTIVITIES: A Low-Rate Initial Production decision is planned for 2QFY97.

PRIME CONTRACTOR: General Dynamics (Land Systems Division) (Sterling Heights, MI)

* See appendix for list of subcontractors.

**Objective Individual
Combat Weapon
(OICW)
Advanced Technology
Demonstration (ATD)
(1998-1999):**

The objective individual combat weapon ATD will demonstrate a potential replacement for the 5.56-mm M16 family of rifles and the 40-mm M203 grenade launcher. Its goal is to dramatically improve the probability of hit, lethality and versatility in all operational environments. Weapons concepts being pursued by two competing contractors, AAI Corp. and Alliant Techsystems, both feature a revolutionary, ergonomically designed and integrated weapon system, coupling the firepower of 20-mm air bursting and 5.56-mm kinetic energy projectiles. These concepts have become feasible because of recent advances in miniaturized fuzing and modular, opto-electronic fire control systems. The bursting munition capability allows a soldier to attack personnel who are in defilade, such as those in or behind structures that one might encounter in urban combat.

Application of controlled air-bursting munitions will provide decisive target



effects, providing a new, currently unavailable capability to our troops for peacekeeping, peace enforcement, counterterrorism and surgical strike missions. The 5.56-mm kinetic energy weapon provides direct fire and suppressive fire capabilities.

The OICW is featured as the individual weapon for the future land warrior. In 1999, a battle lab experiment at Ft. Benning, GA, will include safety-certified weapons and live fire demonstrations.



**Rapid Force Projection Initiative
(RFPI)
Advanced Concept
Technology Demonstration
(ACTD)
(1994-2000):**

The RFPI ACTD will provide early entry forces with advanced technologies and systems to make them more survivable when encountering a heavy force. The purpose of RFPI is to address the operational capability requirements, developed by TRADOC, for lethality and survivability of light forces while maintaining the inherent strategic deployability of these forces. RFPI is based on a "system of systems" concept of Hunters and Standoff Killers and will demonstrate technology solutions which greatly expand the battlespace of light forces. The operational capability enhancements offered by RFPI will enable the light force commander to mass precision fires on threat forces, including armor, at ranges beyond which they can respond. This capability will greatly increase the survivability of early entry forces. The expansion of the light force battlespace is accomplished through the employment of a suite of sensors (Hunters) which will detect threat forces before they can engage the friendly force. The Hunters will provide near-real time digital information through a Light Digital Tactical Operations Center (LDTOC) element, which will match the target with an appropriate weapon, dramatically reducing sensor-to-shooter timelines and providing the commander with the ability to synchronize massed fires on enemy forces. Ground and aerial Hunter systems are equipped with advanced sensor packages capable of detecting targets well forward of friendly forces. Near-real time target information is relayed from the Hunters through a battlefield computer network to the Standoff Killers. These standoff systems are designed to engage and kill enemy armor forces with long-range precision munitions. RFPI ACTD simulation activities will identify the combat worth of each ATD/TD through evaluations performed in the context of the performance of existing fielded and evolving systems in simulated rapid deployment scenarios. Through the integration of field demonstrations including Distributed Interactive Simulation (DIS) connectivity, ATDs/TDs will be scrutinized at a

level heretofore not possible. The RFPI ACTD will integrate simulation and the novel technologies produced by individual ATDs/TDs into a large-scale field experiment in full coordination with TRADOC, Battle Labs, and other Users. The ACTD is a tool for the supporting User elements to explore emerging warfighting concepts and doctrine through planning, conduct of, and participation in the ACTD large scale field experiment. The ACTD provides an opportunity for extensive User interaction with the new RFPI Hunter Standoff Killer (HSOK) concept and its emerging technologies while encouraging User exploration of a variety of excursions to current (baseline) procedures. The U.S. Army Forces Command (FORSCOM) has selected an element of the XVIII Airborne Corps to serve as the RFPI ACTD Experiment Force. This unit will retain selected experiment materiel (residuals) for at least two years to perform an extended User evaluation and to allow arrangements for long-term retention which may potentially result in acquisition decisions for selected high-payoff systems. The enhancements to the operational capability requirements of early entry and light forces provided by RFPI technologies will significantly reduce threat combat power prior to the occurrence of the direct fire battle. The capability to overmatch any threat force with highly deployable forces is essential for the success of a force projection Army.

**Hunter Sensor Suite
Advanced Technology
Demonstration (ATD)
(1994-1997):**

This ATD will develop and demonstrate advanced sensor suite technology on a hunter/scout vehicle to provide on-the-move, long range target acquisition and precision target location information with reduced targeting hand-off timelines to standoff killers. The long range acquisition capability will be accomplished by using a stabilized, mast mounted second generation FLIR, day TV, and vehicle mounted acoustic cueing sensors. Precision targeting will be through an eyesafe laser rangefinder, GPS, north-seeking module and precision gimbals. Aided target recognition will be employed to reduce the operator's time to detect. Pacing technologies include: second generation focal plane arrays, advanced signal processing hardware, image compression/transfer techniques, ground-based aided target recognition/tracking algorithms, acoustic sensors, and long range optics. Additionally, the ATD will provide a C4I interface for transmission of voice and digital messages, as well as imagery. The Hunter Sensor Suite will be integrated on a hunter vehicle for use in the RFPI Advanced Concept Technology Demonstration (ACTD). Supports: Early Entry Light Forces.

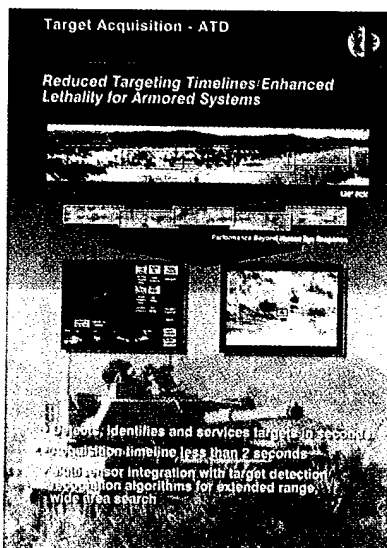


Enhanced Fiber Optic Guided Missile (EFOGM) Advanced Technology Demonstration (ATD) (94-01):

The Enhanced Fiber Optic Guided Missile (EFOGM) is the primary "killer" within the "hunter/standoff killer" concept of the Rapid Force Projection Initiative and the OSD-approved RFPI ACTD. The EFOGM system is a multi-purpose, precision kill weapon system. The primary mission of the EFOGM is to engage and defeat threat armored combat vehicles, other high value ground targets, and hovering or moving rotary wing aircraft that may be masked from line of sight direct fire weapon systems. In addition, the system can be used to surgically strike with minimal collateral damage. EFOGM is a day/night, adverse weather capable system that allows the maneuver commander to extend the battle space beyond line of sight to ranges up to 15 kilometers. The system consists of a gunner's station, a tactical missile, and a fiber optic data link. The missile can navigate to the target area, and the gunner can intervene at any time to lock on and engage any detected targets. The gunner views the flightpath and target via a seeker on the missile linked to the gunner's video console. The missile to be demonstrated will incorporate an IR imaging seeker, a variety of advanced targeting functionalities and a global positioning system (GPS)-based inertial measurement unit for accurate targeting. Beginning 4QFY98, EFOGM will participate in the RFPI ACTD at Fort Benning, GA. In a deployable demonstration, EFOGM will undergo a two-year Extended User Evaluation (EUE) with the XVIII Airborne Corps beginning in FY99 during which an EFOGM Company deployed with a Company Command and Control Element, 3 Platoon Leader's Vehicle, and 12 EFOGM launchers to support an Infantry Brigade Task Force.



Target Acquisition Advanced Technology Demonstration (ATD) (94-98):



The Target Acquisition ATD will demonstrate a combat vehicle, multi-sensor suite to provide automated wide area search, acquisition, identification and prioritization of targets. These technologies will allow reduced crew workload and decreased target acquisition timelines, in support of lethal, deployable combat vehicles. The sensor suite consists of two sensor gimbals. A standard second generation FLIR, multi-function laser, and TV camera are housed on one platform. A second sensor platform contains a Moving Target Indicator (MTI) millimeter radar. The two gimbals search independently and provide target cues to the operator or to the other sensor platform. The multifunction laser will have three operating modes: rangefinding, designating, and a non-imaging ladar. The ladar data is fed directly into the aided target recognition processor to allow for FLIR/ladar fusion and synergistically improve performance. Supports: Future Scout/Cavalry Vehicle, M1A2 SEP, Future Combat System.

Rotorcraft Pilot's Association (RPA) Advanced Technology Demonstration (ATD) Program (1993-1999):

The RPA ATD program objective is to establish revolutionary improvements in combat helicopter mission effectiveness through the application of artificial intelligence for cognitive decision aiding and integration of advanced pilotage sensors, target acquisition, armament and fire control; communications, cockpit controls and displays; navigation; survivability; and flight control technologies.

The goal of the RPA ATD is to significantly increase the mission effectiveness of our combat aviation systems. Revolutionary mission equipment package technologies will be integrated with high-speed data fusion processing and cognitive decision-aiding expert systems to achieve maximum effectiveness and survivability for our combat helicopter forces.

The RPA will expand aviation's freedom of operation, improve response time for quick reaction and mission redirect events, increase the precision strike capability for high-value, short-dwell-time targets and increase day/night, all-weather operational capability. It will contribute greatly to the pilot's ability to "see and comprehend the battlefield" in all conditions; to rapidly collect, synthesize and disseminate battlefield information; and to take immediate and effective actions.

The RPA ATD will demonstrate the following quantitative measures of performance beyond RAH-66 performance during 24-hour, all-weather battlefield conditions: a 30 to 60 percent reduction in mission losses, a 50 to 150 percent increase in targets destroyed and a 20 to 30 percent reduction in mission timelines. Supports: RAH-66 Comanche, AH-64 Apache improvements and has dual-use potential.

National Automotive Center (NAC):

The National Automotive Center (NAC) leverages commercial industry's large investment in automotive technology research and development and initiates shared technology programs that are focused on benefiting military ground vehicle systems. The NAC, located at the Tank Automotive and Armaments Command (TACOM) is part of the Tank-Automotive Research, Development and Engineering Center (TARDEC). The NAC serves as the catalyst linking industry, academia and government agencies as a clearinghouse for the development and exchange of automotive technologies. The NAC executes collaborative research and development (R&D) contracts and other initiatives to capitalize on commercial industry's investment in well-defined, high return-on investment areas tied to key Army science and technology objectives related to advanced land combat. The NAC focuses collaborative R&D contracts on key military automotive technology thrust areas to include: mobility, electronics,

logistics, safety and environmental protection with the goal of (a) improving the performance and endurance of ground vehicle fleets, and (b) reducing ground vehicle design, manufacturing, production, and operating and sustainment costs. Two-way industry/government technology transfer is pursued under the Cooperative Research and Development Agreements (CRADAs). The activities of the NAC are supported by other Government agencies via a linkage created under Memoranda of Agreement. These linkages permit the NAC to consolidate the collective expertise of federal government departments such as Energy, Transportation and Commerce and other DoD agencies.

The NAC sponsored a Collision Warning Safety Convoy in the fall of 1995 to demonstrate the use of commercial electronic equipment on military vehicles. The convoy visited Army and National Guard facilities to expose active troops to the technology. The convoy also went to Capital Hill to show law makers the benefits of dual need technology developments.

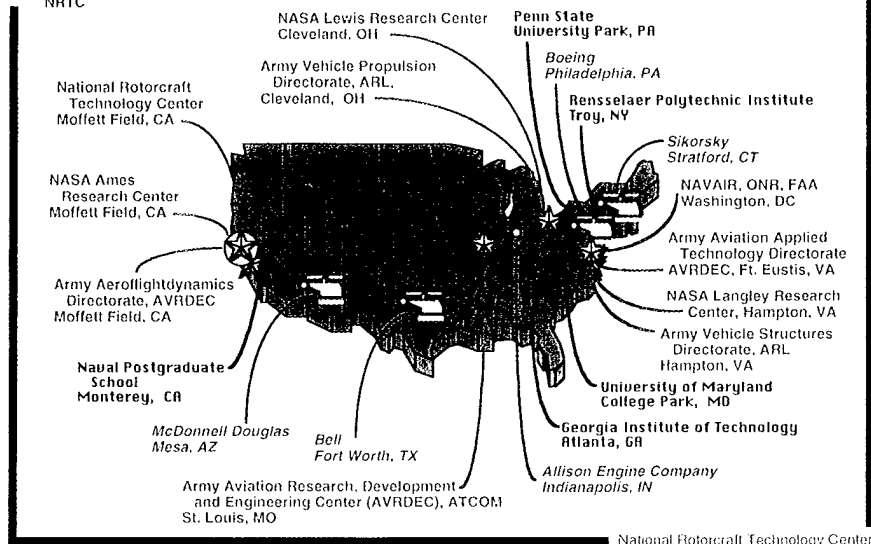


National Rotocraft Technology Center (NRTC):

The National Rotocraft Technology Center (NRTC) is a timely, low-overhead catalyst for facilitating collaborative rotocraft research and development between NASA, DoD/Army and Navy, FAA, industry and academia. It will serve as the "modem" to cooperatively develop and implement a rotocraft technology plan and national strategy that can effectively address civil and military rotocraft needs. The effort will establish an aggressive and clearly focused approach to strengthening the U.S. rotocraft industry's ability to compete in the global market, creating new market opportunities for commercial rotocraft and ensuring the continued supremacy of this technology that is so critical to modern warfare.



NRTC Government, Industry, Academia Research, Development, and Engineering Team



The NRTC adds an innovative approach to include U.S. industry and academia as partners through their focal point, the Rotocraft Industry Technology Association (RITA), a nonprofit corporation formed for this purpose. The focus of this innovative partnership will be the development of rotocraft design, engineering and manufacturing technologies and the sharing of the technology among RITA members.

U.S. industry will have a proactive role in defining the technology tasks to be undertaken. Initial strategic thrusts of the NRTC will address the following five critical path civil/military rotocraft issues: critical dual-use technologies, passenger and community (environmental/safety) acceptance, product and process development, aviation infrastructure, and civil and military standards.

Research project costs will be shared by government funding of \$12 to \$15 million per year and will be matched or exceeded by industry's participation. The initial participating organizations in the NRTC are as follows: NASA, DoD/Army/Navy, FAA, Bell Helicopter, Boeing Helicopters Division, McDonnell Douglas Helicopter, Sikorsky Aircraft, Pennsylvania State University, University of Maryland, Georgia Institute of Technology and the Naval Post-graduate School. The government office of the NRTC is located at Ames Research Center, Moffett Field, Calif., and will have a staff of seven people.

Direct Fire Lethality Advanced Technology Demonstration (ATD) (1998-02):

The Direct Fire Lethality Program will enhance tank kinetic energy penetrator lethality, particularly against explosively reactive armor appliqué arrays, through use of a precursor defeat mechanism. The program will demonstrate range and lethality enhancements for tank munitions and demonstrate the emerging technologies needed to defeat the active protection system threat. In the near term, this project demonstrates advanced warhead concepts for Smart Target Activated Fire and Forget utilizing novel dual liner explosively formed penetrators (EFP) warhead to form an ultra-long EFP. In FY99, it will demonstrate a Smart Barrel Actuator active damping control of an M256 120mm gun tube in non-firing, dynamic tests. In FY01, the ATD will demonstrate improved probability of hit over the current M1A2 using Smart Barrel Actuators, fully integrated Gearless Turret/Gun Direct Drives, and Modern Digital Servo Control.

Military Operations in Urban Terrain (MOUT) (1998-02):

The Military Operations in Urban Terrain (MOUT)-proposed joint (Army/Marine Corps) Advanced Concept and Technology Demonstration (ACTD) encompasses a breadth of technologies ranging from an advanced soldier system, advanced individual precision weapons, combat identification, counter-sniper, non-lethal weapons, advanced sensors, situational awareness and personal protection. The core capability that will be generated via the ACTD is a linkage of a series of advanced systems/components into a MOUT "System of Systems" whereby the components are interfaced, integrated or linked in an architecture to ensure their effective interoperability and functionality in the challenging MOUT environment. The integrated MOUT System of

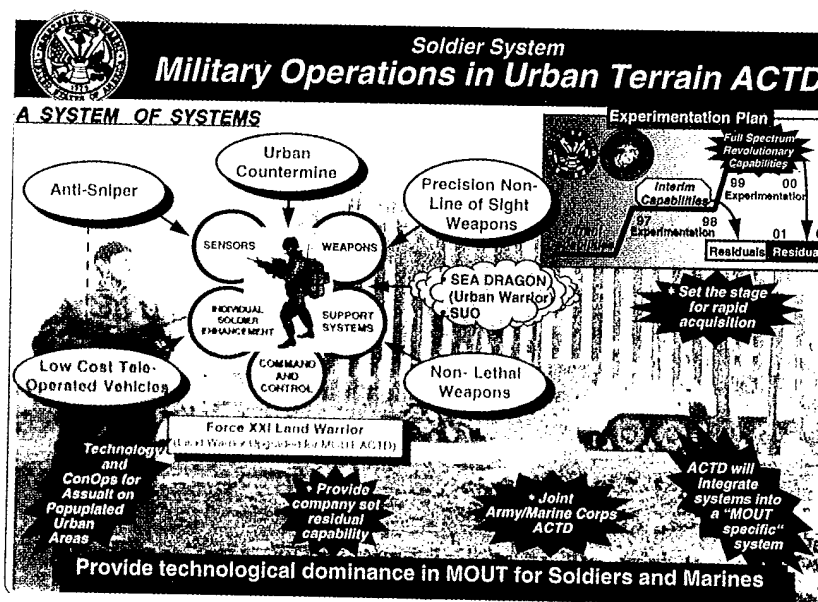
Systems will provide a robust and enhanced, joint operational capability encompassing the areas of urban command, control, communications, computers, and intelligence (C4I), Engagement and Force Protection.

Scout Vehicle Advanced Technology Demonstration (ATD) (97-01):

The army has a requirement to replace High Mobility Multipurpose Wheeled Vehicles and Cavalry Fighting Vehicles in cavalry and scout ground units. The ATD responds to the User's requirements, and is coordinated via the Future Scout and Cavalry System (FSCS) Integrated Concept Team. The ATD will demonstrate the technical feasibility and operational potential of an affordable system optimized for the scout role. The demonstration phase will be conducted competitively, and it will be sufficiently robust so that the traditional demonstration and validation phase can be omitted, saving time and dollars. The ATD will also permit the user to refine the FSCS requirements prior to entering the engineering and manufacturing development phase.

Multifunction Staring Sensor Suite Advanced Technology Demonstration (ATD) (98-01):

This ATD will demonstrate a modular, reconfigurable Multifunction Staring Sensor Suite (MFS3) that integrates multiple advanced sensor components including staring infrared imager, a multifunction laser, and acoustic arrays. The MFS3 will provide ground vehicles, amphibious assault vehicles, and surface ships with a compact, affordable sensor suite for long range noncooperative target identification, mortar/sniper fire location, and air defense against low signature targets. The infrared imaging system will be configured to accommodate either visible to mid infrared or far infrared focal plane arrays. As single focal planes capable of operating across the full optical spectrum mature, these may be inserted into the assembly. The staring infrared sensor will operate at high field rates to allow sniper and mortar detection in addition to the conventional target acquisition functions. Integration of a multifunction, multiwavelength laser system will incorporate ranging, range mapping, target profiling, and laser designation to support target location, target target cueing, aided target identification, and target designation. The acoustic array will provide target cueing, location, and assist in automated targeting functions. Supports: Future Scout Vehicle, Future Infantry Vehicle, Future Combat System.



System Contractors with $\geq 5\%$ of total program value for FY97 are listed

Abrams
Allison Transmission: Indianapolis, IN;
General Dynamics: Lima, OH;
 Warren/Sterling Heights, MI;
LITCO: Idaho Falls, ID;
Texas Instruments: Dallas, TX

Advanced Field Artillery Tactical Data System (AFATDS)
GTE: Taunton, MA;
Hughes: Fort Wayne, IN;
MILTOPE Corp.: Hope Hull, AL;
SAIC: San Diego, CA

Advanced Tank Armament System (ATAS)
General Dynamics: Sterling Heights, MI;
Texas Instruments: Plano, TX;
Western Howen Design: Irvine, CA

Advanced Quick Fix (AQF)
Lockheed Martin: Owego, NY

Aerostat
Hughes Raytheon: Bedford, MA;
Lockheed Martin: Akron, OH;
Northrop Grumman: Baltimore, MD

Air Defense Artillery (ADA) Tactical Operations Centers (TOCs)
TRW: Huntsville, AL

Airborne Reconnaissance Low (ARL)
California Microwave: Belcamp, MD;
TRW: Sunnyvale, CA

Airborne Standoff Minefield Detection System (ASTAMIDS)
Raytheon: Tewksbury, MA;
Westinghouse: Baltimore, MD

All Source Analysis System (ASAS)
BDM: McLean, VA;
California Microwave: Woodland Hills, CA;
Electronic Warfare Associates: Herndon, VA;
Jet Propulsion Laboratory: Pasadena, CA;
Lockheed Martin: San Jose, CA;
 Littleton, CO; Pittsfield, MA;
Logicon: Arlington, VA;
Magnavox: Fort Wayne, IN;
MANTECH: Killeen, TX;
MITRE: McLean, VA;
Mystech: Falls Church, VA;
SAIC: San Diego, CA;
Sytex: McLean, VA

Apache Longbow
Allied Signal: Teterboro, NJ;
Lockheed Martin: Orlando, FL;
McDonnell Douglas: Mesa, AZ;
Northrup Grumman: Linthicum, MD

Armored Security Vehicle (ASV)
Textron: (Marine and Land Systems Division) New Orleans, LA

Army Data Distribution System (ADDS)
Bowmar Instrument: Fort Wayne, IN;
GEC-Marconi: San Marcos, CA; Totowa, NJ;
General Motors: (Hughes Electronics) El Segundo, CA; Forrest, MS;
HAC/Magnavox: Fort Wayne, IN;
ITT: Fort Wayne, IN;
Rockwell: Cedar Rapids, IA;
White Technology: Phoenix, AZ

Army Global Command and Control System (AGCCS)
Lockheed Martin: Springfield, VA

Army Tactical Missile System (Army TACMS)
Atlantic Research: Camden, AR;
 Gainesville, VA;
Honeywell: Clearwater, FL; Minneapolis, MN;
KDI: Cincinnati, OH;
Lockheed Martin Vought Systems: Camden, AR; Dallas, TX;
 Horizon City, TX;
Simmonds Precision: Cedar Knolls, NJ;
Spincraft: New Berlin, WI;
Teledyne: Hollister, CA; Los Angeles, CA;

Automatic Chemical Agent Detector/Alarm (ACADA)
Graseby Dynamics: Watford, Herts, U.K.

Battlefield Combat Identification System (BCIS)
FMC: (United Defense, LP) San Jose, CA;
General Dynamics: Sterling Heights, MI;
Hughes: Fort Wayne, IN;
TRW: Redondo Beach, CA

Biological Integrated Detection System (BIDS)
Barry Controls: Brighton, MA;
Battelle: Columbus, OH;
Bio Road: Hercules, CA;
Booz Allen & Hamilton: McLean, VA;
Brucker Instruments: Billerica, MA;
Environmental Technology Group: Baltimore, MD;
Harris Corporation: Rochester, NY;
Kaman Sciences: Alexandria, VA;
Power & Engine Manufacturing: Minneapolis, MN;
Systems Research Corporation: Burlington, MA;
Thermal Systems: St. Paul, MN

Black Hawk
DOW-UT: Tallassee, AL;
General Electric: Lynn, MA;
United Technologies: Stratford, CT

Bradley Fire Support Team (BFIST) Vehicle
FMC: (United Defense Limited Partnership) San Jose, CA;
Systems Electronics: St. Louis, MO

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle (IFV/CFV)
HAC: LaGrange, GA;
Lockheed Martin: Pittsfield, MA;
MLS: San Jose, CA;
Texas Instruments: McKinney, TX;
FMC: (United Defense Limited Partnership) San Jose, CA; York, PA

Brilliant Anti-Armor Submunition (BAT)
Alliant Signal: Teterboro, NJ;
Alliant Techsystem: Hopkins, MN;
Honeywell: Minneapolis, MN;
Lockheed Martin Vought Systems: Grand Prairie, TX;
 Baltimore, MD;
Northrop Grumman: Huntsville, AL;
 Hawthorne, CA; Baltimore, MD;
Olin: Redmond, WA;
Raytheon: Sudbury, MA;
Talley Defense: Mesa, AZ

CH-47 Chinook/Improved Cargo Helicopter (ICH)
Allied Signal: Phoenix, AZ;
Boeing Helicopters: Philadelphia, PA

Chemical Agent Monitor (CAM)
Intellitec Division: (Technical Products Group) DeLand, FL

Circuit Switch/Message Switch
California Microwave: Woodland Hills, CA;
GTE: Taunton, MA;
Laguna Industries: Albuquerque, NM;
LITTON: Van Nuys, CA

Close Combat Tactical Trainer (CCTT)
ECC International: Orlando, FL;
Evans & Sutherland: Salt Lake City, UT;
Lockheed Martin: Orlando, FL;
Pulau Electronics: Orlando, FL;

Comanche
AlliedSignal: Phoenix, AZ;
Boeing: Philadelphia, PA;
Lockheed Martin: Orlando, FL;
Rolls Royce/Allison Engine: Indianapolis, IN;

Sikorsky: Stratford, CT;
TRW: San Diego, CA

Combat Service Support Control System (CSSCS)
GTE: Taunton, MA;
LMC: Springfield, VA;
TRW Inc.: Carson, CA

Command and Control Vehicle (C2V)
Airflow: Fredericktown, MD;
Brunswick: DeLand, FL;
Cummins Engine: Columbus, IN;
Lockheed Martin: San Jose, CA;
FMC: (United Defense Limited Partnership) San Jose, CA; York, PA

Common Hardware/Software (CHS)
Carlyle Partners: (BDM International Inc.) Huntsville, AL;
GTE: Taunton, MA;
Hewlett Packard: Palo Alto, CA;
Magnavox: Fort Wayne, IN;
MILTOPE: Hope Hull, AL; Melville, NY;
SAIC: San Diego, CA;
Sun Microsystems: Mountain View, CA

Crusader
EDS: Herndon, VA;
FMC: (United Defense, LP) Minneapolis, MN;
General Dynamics: Sterling Heights, MI;
Lockheed Martin: Burlington, VT;
PRC: McLean, VA

Deployable Medical Systems (DEPMEDS)
Airtacs: Red Lion, PA;
BIOCHEM International: Waukesha, WI;
Brunswick: Marion, VA;
Eastman Kodak: Rochester, NY;
Engineered Systems: Trappe, PA;
Ohmeda Medical: Pleasanton, CA;
Outdoor Venture: Stearns, KY;
Picker: Cleveland, OH

Digital Transmission Assemblages
Aydin: San Jose, CA;
Centrair: Birmingham, AL;
Gichner Systems Group: Dallastown, PA;
Group Technologies: Tampa, FL;
Harris Corp.: Melbourne, FL;
Laguna Industries: Laguna Pueblo, NM;
Raytheon: Marlboro, MA;
Tobyhanna Army Depot: Tobyhanna, PA;
Transistor Devices: Cedar Knolls, NJ

Driver's Vision Enhancer (DVE)
Outsource Solution: McKinney, TX;
SAIC: San Diego, CA;
Texas Instruments: Dallas, TX

Enhanced Trackwolf (ET)
Engineering Research Associates: Vienna, VA

Extended Range Multiple Launch Rocket System (ER-MLRS)

KDI: Cincinnati, OH;
Lockheed Martin Vought Systems:
Camden, AR; Dallas, TX;

Raytheon: Tewksbury, MA

Family Of Medium Tactical Vehicles (FMTV)

Allison: Indianapolis, IN;
Caterpillar: Peoria, IL;
McLaughlin: Moline, IL;
Michelin: Greenville, SC;
Rockwell International: Newark, OH;
Scott Manufacturing: Lubbock, TX;
Stewart & Stevenson Services: Houston, TX

Force Projection Tactical Operations Center (FP TOC)

Brown International: Huntsville, AL;
TRW: Dominguez Hills, CA

Force Provider (FP)

Dynamics Corp. of America: Bridgeport, CT;
EASI: St. Louis, MO;
IME: Duva, IL;
Microphor: Willits, CA;
Outdoor Venture: Stearns, KY;
Sierra Army Depot: Sierra, CA;
Teledyne: Huntsville, AL

Forward Area Air Defense Command and Control (FAADC²)
TRW: Redondo Beach, CA

Grizzly

FMC: (United Defense, LP) York, PA;

Ground-Based Common Sensor (GBCS)

FMC: (United Defense, LP) Santa Clara, CA;

IBM: Owego, NY;

Lockheed Martin: (Lockheed-Sanders Corp. JV w/AEL) Hudson, NH;

Lockheed Martin: Owego, NY;
Magnavox: Fort Wayne, IN;
Motorola: Scottsdale, AZ;

Guardrail/ Common Sensor (GR/CS)

ESCO: St. Louis, MO;
IBM: Owego, NY;
Raytheon: (Beech Aircraft) Wichita, KS;
TRW: (TRW Inc.) Sunnyvale, CA;
UNISYS: Salt Lake City, UT

Heavy Equipment Transporter System (HETS)

Oshkosh Truck: Oshkosh, WI;
Systems and Electronics: St. Louis, MO

Hercules

FMC: (United Defense, LP) York, PA;

High Mobility Artillery Rocket System (HIMARS)

Lockheed Martin Vought Systems:
Camden, AR; Dallas, TX

High Mobility Multipurpose Wheeled Vehicle (HMMWV)

AM General: South Bend, IN; Livonia, MI;
O'Gara, Hess and Eisenhardt: Fairfield, OH

Hornet

Textron: Wilmington, MA

Hydra 70 Rocket System

Lockheed Martin: Camden, AR;
Hercules: Radford, VA;
Radford Army Ammunition Plant:
Radford, VA;
Thiokol: Brigham City, UT

Integrated Family of Test Equipment (IFTE)

MILTOPE: Hope Hull, AL;
Northrop-Grumman: Great River, NY;
SAIC: San Diego, CA

Integrated Meteorological System (IMETS)

Logicon: Arlington, VA; Tacoma, WA;
Sytex: McLean, VA

Integrated System Control (ISYSCON)

ACSI: Burlington, MA;
BBN Systems and Technologies:
Cambridge, MA;
GTE: Taunton, MA; Raleigh, NC;
TRW: Carson, CA

Javelin

ECC International: Orlando, FL;
Lockheed Martin: Orlando, FL;
Texas Instruments: Lewisville, TX

Joint Service Lightweight Integrated Suit Technology (JSLIST)

Battelle: Stafford, VA

Joint Surveillance Target Attack Radar (Joint STARS) Ground Station Module (GSM)

Motorola: Scottsdale, AZ;

Joint Tactical Ground Station (JTACS)

Datron: Simi Valley, CA;
GenCorp: (Aerojet) Azusa, CA;
Colorado Springs, CO;

Gichner Systems Group: Dallastown, PA;
Lockheed Martin: Boulder, CO;
MEVATECH: Huntsville, AL;
Response Service and Innovation:
Austin, TX;
Silicon Graphics: Irvine, CA

Joint Tactical Terminal (JTT)

E-Systems: St. Petersburg, FL
Hughes: Fort Wayne, IN

Kiowa Warrior

Allison Engine: Indianapolis, IN;
Textron: Fort Worth, TX;
Honeywell: Albuquerque, NM;
McDonnell Douglas: Monrovia, CA

Laser HELLFIRE

Lockheed Martin: Ocala, FL; Orlando, FL;
Rockwell: Duluth, GA

Line-of-Sight Antitank (LOSAT)

Allied Signal: Cheshire, CT;
Lockheed Martin Vought Systems:
Orlando, FL; Cambridge, MA;
Dallas, TX; Bellevue, WA;
Texas Instruments: Dallas, TX;

Longbow Hellfire Missile

GEC-Marconi: Wayne, NJ;
Lockheed Martin: Orlando, FL;
Northrop Grumman: Baltimore, MD;
Huntsville, AL;
TRW: Redondo Beach, CA

M113 Family of Vehicles (FOV)

Allison Transmission: Indianapolis, IN;
Detroit Diesel: Detroit, MI;
FMC: (United Defense, LP)
Texarkana, TX;

Maneuver Control System (MCS)

CSC: Eatontown, NJ;
GTE: Taunton, MA; (Telos)
Shrewsbury, NJ;
Lockheed Martin: Tinton Falls, NJ;
Mitre: Eatontown, NJ;
Telos: Shrewsbury, NJ

Medium Extended Air Defense System (MEADS)

There are two international contractor teams competing during the PD-V Phase.

MEADS Inc.: [(Hughes Raytheon consortium: Bedford, MA; Huntsville, AL; Tucson, AZ; El Segundo, CA); (Alenia: Italy); (Deutsch Aerospace: Germany); (Siemens: Germany)];

MEADS International Inc.: [(Lockheed Martin: Orlando, FL; Huntsville,

AL; Aquora Hills, CA); (Alenia, Italy); (Deutsch Aerospace: Germany); (Siemens: Germany)]

Medium Truck Remanufacture

Accutek: Walnut, CA;
Allison Transmissions: Indianapolis, IN;
AM General: South Bend, IN;
Caterpillar: Mossville, IN;
Hayes Wheels International:
Romulus, MI;
Michelin Tire: Troy, MI

Milstar (Army)

CommQuest: Enchinitas, CA;
Harris: Melbourne, FL;
Lockheed Martin: Camden, NJ;
Rantee Microwave & Electronics:
Calabasas, CA;
Raytheon: Marlboro, MA;
Rockwell: Richardson, TX;
Titan (Linkabit): San Diego, CA;
TRW: Redondo Beach, CA

Mobile Subscriber Equipment (MSE)

AM General: Livonia, MI;
Ericsson Radio Systems AB: Molndal, Sweden;
FN Manufacturing: Columbia, SC;
Gould: El Monte, CA;
GTE: Taunton, MA;
KECO Industries: Florence, KY;
Magnavox: Philadelphia, PA;
Raytheon: Marlboro, MA;
Telex Communications: Lincoln, NE;
Thomson CSF: Laval, Cholet & Toulouse, France

Mortar (120 mm)

Accudyne: Janesville, WI;
ARMTEC: Coachella, CA;
Brockway Standard: Homerville, GA;
Duchossois Industries: Scranton, PA;
Fermont: Bridgeport, CT;
FMS: Los Angeles, CA;
Hercules Inc.: Radford, VA;
KDI: Cincinnati, OH;
Lockheed Martin Vought Systems:
Burlington, VT;
Lockheed Martin: Archibald, PA;
MMOS Milan Army Ammunition Plant:
Milan, TN;
Olin: East Alton, IL;
Pine Bluff Arsenal: Pine Bluff, AR;
Radford Army Ammunition Plant:
Radford, VA;
Red River Army Depot: Texarkana, TX;
Scranton Army Ammunition Plant:
Scranton, PA;

United Ammunition Container: Milan, TN;
Watervliet Arsenal: Watervliet, NY

**Multi-Purpose Individual Munition/
Short Range Assault Weapon
(MPIM/SRAW)**
GenCorp: (Aerojet) Sacramento, CA;
Lockheed Martin: Ranch Santa
Margarita, CA

**Multiple Launch Rocket System
(MLRS)**
Allied Signal: Teterboro, NJ;
Atlantic Research: Camden, AR;
Day & Zimm: Texarkana, TX;
Lockheed Martin Vought Systems:
Camden, AR; Dallas TX;
FMC: (United Defense Limited
Partnership) York, PA

National Missile Defense (NMD)
Hughes: El Segundo, CA; Tucson, AZ;
Lockheed Martin: Sunnyvale, CA;
Raytheon: Bedford, MA;
Rockwell: Downey, CA;
Teledyne Brown: Huntsville, AL

**NAVSTAR Global Positioning System
(GPS)**
Rockwell: Cedar Rapids, IA;
Trumble Navigation: Sunnyvale, CA

**Night Vision (NV) Image
Intensification (I2)**
Elbit: Haifa, Israel;
General Motors: (Hughes Electronics)
El Segundo, CA;
ITT: Roanoke, VA;
Litton: Tempe, AZ;
Lockheed Martin: Orlando, FL;
Nashua, NH;
Phototelesis: San Antonio, TX;
Texas Instruments: McKinney, TX;
TRACOR Aerospace: Austin, TX

**Nuclear, Biological, and Chemical
Reconnaissance System (NBCRS) - Fox
General Dynamics: (Land Systems
Division) Warren, MI;**
Anniston Army Depot: Anniston, AL;
Thyssen Henschel: (Germany)

Paladin
FMC: (United Defense, LP)
Chambersburg, PA;
Honeywell: St. Petersburg, FL;
Letterkenny Army Depot:
Chambersburg, PA;
Sechan Electronics: Littiz, PA;
Watervliet Arsenal: Watervliet, NY

Palletized Load System (PLS)
Allison: Indianapolis, IN;
Detroit Diesel: Detroit, MI;
Grove Crane: Shady Grove, PA;
Oshkosh Truck: Oshkosh, WI;
OTC Trailer: Bradenton, FL;
Rockwell: Troy, MI;
Steeltech: Milwaukee, WI

Patriot
Atlantic Research: Camden, AR;
Gainesville, VA;
GTE: Taunton, MA;
Honeywell: Clearwater, FL;
Minneapolis, MN;
Hughes: Torrance, CA;
J.L. Rust: Albuquerque, NM;
LITTON: Williamsport, PA;
Lockheed Martin Vought Systems:
Grand Prairie, TX;
Lockheed/Sanders: Merrimack, NH;
Mountaingale: Reno, NV;
Parsvant: Melbourne, FL;
Raytheon: Bedford, MA;
Rockwell: Duluth, GA;
SCI Systems: Huntsville, AL

Protective Mask Family (M40 Series)
ILC Dover: Dover, DE;
Mine Safety Appliance: Pittsburgh, PA;
TSI: St. Paul, MN

Radiac
Nuclear Research Corp.: Dover, NJ

**Remote Sensing Chemical Agent
Detection (M21)**
Intellitec: DeLand, FL

Satellite Communications (SATCOM)
Cincinnati Electronics: Cincinnati, OH;
GTE: Taunton, MA;
Harris: Melbourne, FL;
Lockheed Martin: Bethesda, MD;
Magnavox: Torrance, CA; Fort Wayne, IN;
Motorola: Scottsdale, AZ;
Raytheon: Marlborough, MA;
Stanford Electronics: Colorado Springs, CO;
Titan: San Diego, CA;

**Second Generation Forward Looking
Infrared (2d Gen FLIR)**
General Motors: (Hughes Aircraft)
El Segundo, CA;
Pentastar: Huntsville, AL;
Texas Instruments: McKinney, TX

Sense and Destroy Armor (SADARM)
Alliant Techsystems: Hopkins, MN;
Alpha Industries: Woburn, MA;
GenCorp (Aerojet): Azusa, CA;

LITTON: Tempe, AZ;
Teledyne: Los Angeles, CA

Sentinel
Brunswick: Marion, VA;
Electro-Tech: Blacksburg, VA;
Hughes: El Segundo, CA;
Forrest, MS; Torrance, CA;
KINTEC: Dallas, TX;
LITTON: San Carlos, CA;
Lockheed Martin: Clearwater, FL;
Lucas Systems: Palo Alto, CA;
MA/COM: Burlington, MA;
NC Systems: Signal Hill, CA;
SAIC: San Diego, CA;
SoRa Electronics: Torrance, CA;
TMS: Polson, MT;
Varian: Beverly, MA;
Watkins Johnson: Palo Alto, CA;

**Single Channel Ground and Airborne
Radio System (SINCGARS)**
General Dynamics: Tallahassee, FL;
ITT: Fort Wayne, IN;
Talla-Comm: Tallahassee, FL

Small Arms (M16A2 Rifle)
Colt's Manufacturing: Hartford, CT;
FN Manufacturing: Columbia, SC

**Small Arms (M249 Squad Automatic
Weapon)**
FN Manufacturing: Columbia, SC

Small Arms (M4 Carbine)
Colt's Manufacturing: Hartford, CT

**Small Arms (MK-19-3 40 mm
Automatic Grenade Launcher)**
Duchossois Industries: (Saco Defense)
Saco, ME

Smoke Generator (M56)
Robotic Systems Technology:
Westminster, MD

Smoke Generator (M58)
Anniston Army Depot: Anniston, AL
Robotic Systems Technology:
Westminster, MD

Soldier System
Aimpoint Inc.: Herndon, VA;
Alliant Tech Systems: Hopkins, MN;
DECILOG: Melville, NY
Hughes: El Segundo, CA;
Motorola: Scottsdale, AZ;
OLIN: East Alton, IL
SARCO: Sterling, NJ;
Texas Instruments: San Antonio, TX;

**Standard Army Management
Information Systems (STAMIS)**
Computer Sciences: Moorestown, NJ;
Lockheed Martin: Bethesda, MD;
PRC: McLean, VA

**Standardized Integrated Command
Post System (SICPS)**
Brunswick: Marion, VA;
Camel: Knoxville, TN;
FMC: (United Defense, LP) San
Jose, CA;
Gichner Systems Group: Hunt Valley, MD;
Letterkenny Army Depot: Letterkenny, PA;
Tobyhanna Army Depot: Tobyhanna, PA

Stinger
Atlantic Research: Gainesville, VA;
CHIP Supply, Inc.: Orlando, FL;
Hughes: Tucson, AZ;
Farmington, NM;
Honeywell: Minneapolis, MN

**Tactical Endurance Synthetic Aperture
Radar (TESAR)**
Northrup Grumman: Baltimore, MD

Tactical High Energy Laser (THEL)
TRW: Redondo Beach, CA

Tactical Quiet Generators (TQG)
Dewey Electronics: Oakton, NJ;
Fermont: Bridgeport, CT;
Goodman Ball: Menlo Park, CA;
KECO Industries: Florence, KY;
MCI: Dallas, TX;
T and J Manufacturing: Oshkosh, WI

**Tactical Unmanned Aerial Vehicle
(TUAV)**
Alliant Techsystems: Clearwater, FL;
Hopkins, MN;
Cirrus Design: Duluth, MN;
GS Engineering: Incline Village, NV

Tactical Unmanned Vehicle (TUV)
TBD

Tank Main Gun Ammunition
Alliant-Ferramatic Operations: Totowa, NJ;
Alliant-Radford: Radford, VA;
Alliant Technology: Clearwater, FL;
Alliant TechSystems: Brooklyn Park, MN;
ARMTEC: Coachella, CA;
Bulova: Lancaster, PA;
GenCorp: (Aerojet) Jonesboro, TN;
Hercules: Clearwater, FL; Radford,
VA; Rocket City, WV;
Hexcel: Livermore, CA;
Mason and Hangar: Middletown, IA;
Motorola: Scottsdale, AZ;
Nuclear Metals: Concord, MA;

Olin: St. Petersburg, FL;
Olin-Flinchbaugh: Red Lion, PA;
Radford Army Ammunition Plant:
Radford, VA

**Task Force XXI Tactical Operations
Centers (TOCS)**
BIC: Huntsville, AL;
TRW: Huntsville, AL

**Theater High Altitude Area Defense
(THAAD) System**
CRC: Huntsville, AL;
LITTON: Agoura Hills, CA;
Lockheed Martin: Huntsville, AL;
Sunnyvale, CA; Lexington, MA;
White Sands, NM;
Raytheon: Bedford, MA; Waltham, MA;
TRW: Redondo Beach, CA

Thermal Weapon Sight (TWS)
Aeroflex Laboratories: Plainview, NY;
General Motors: (Hughes
Electronics) El Segundo, CA;
(Hughes Georgia Inc.) LaGrange,
GA; (Hughes Elcan Optical
Technologies) Ontario, Canada;
(Hughes Microelectronics Division)
Newport Beach, CA; (Packard
Hughes Interconnects) Irvine, CA;
Santa Barbara Research Center:
Santa Barbara, CA;
Zeis Eltro Optronics: Germany

**TOW Improved Target Acquisition
System (ITAS)**
Cercon: Hillsboro, TX;
DY4 Systems: Ontario, Canada;
IMO (VARO): Garland, TX;
Keltec: Ft Walton Beach, FL;
Lockheed Martin: Syosset, NY;
OMI: Melbourne, FL;
Santa Barbara Research Center: Goleta, CA;
Texas Instruments: McKinney, TX

TOW Missile
Alliant Techsystems: VA;
Allied Signal: Cheshire, CT;
American Steel & Wire: Cleveland, OH;
Cabot: PA;
Eagle Picher: Joplin, MO;
GenCorp: Azusa, CA;
General Motors: (Hughes Electronics)
Tucson, AZ; Goleta, CA;
Kaiser Aluminum: Erie, PA;
Lockheed Martin: Archibald, PA;
Mason and Hanger: Middletown, IA;
Texas Instruments: Dallas, TX

Vehicle Teleoperation Capability (VTC)
Omnitech Robotics: Englewood, CO

Volcano
Alliant Tech Systems: Edina, MN;
Brunswick: Deland, FL;
Intellitech: Deland, FL;
Nomura Enterprise: Rock Island, IL;
S & K Electronics: Roman, MT

Wolverine
General Dynamics: Lima, OH; Sterling
Heights, MI;
MAN GHH: Dusseldorf, Germany

System Contractors with $\geq 5\%$ of total program value for FY97 are listed

ALABAMA

Advanced Field Artillery Tactical Data System (AFATDS)
MILTOPE: Hope Hull, AL

Air Defense Artillery (ADA) Tactical Operations Centers (TOCs)
TRW: Huntsville, AL

Black Hawk
DOW-UT: Tallassee, AL

Common Hardware/Software (CHS)
Carlyle Partners (BDM International):
Huntsville, AL;
MILTOPE: Hope Hull, AL

Digital Transmission Assemblages
Centrair: Birmingham, AL

Force Projection Tactical Operations Center (FP TOC)
Brown International: Huntsville, AL

Force Provider (FP)
Teledyne: Huntsville, AL

Integrated Family of Test Equipment
MILTOPE: Hope Hull, AL

Joint Tactical Ground Stations (JTAGS)
MEVATECH: Huntsville, AL

Longbow Hellfire Missile
Northrup Grumman: Huntsville, AL

Medium Extended Air Defense System (MEADS)

MEADS Inc. (Hughes Raytheon consortium):
Huntsville, AL;
MEADS International Inc. (Lockheed Martin): Huntsville, AL

National Missile Defense (NMD)
Teledyne Brown: Huntsville, AL

Nuclear, Biological, and Chemical Reconnaissance System (NBCRS)-Fox
Anniston Army Depot: Anniston, AL

Patriot
SCI Systems: Huntsville, AL

Second Generation Forward Looking Infrared (2d Gen FLIR)
Pentastar: Huntsville, AL

Smoke Generator (M58)
Anniston Army Depot: Anniston, AL

Task Force XXI Tactical Operations Centers (TOCs)
BIC: Huntsville, AL
TRW: Huntsville, AL

Theater High Altitude Area Defense (THAAD) System
CRC: Huntsville, AL;
Lockheed Martin: Huntsville, AL

ARIZONA

Apache Longbow
McDonnell Douglas: Mesa, AZ

Army Data Distribution System (ADDS)
White Technology: Phoenix, AZ

Brilliant Anti-Armor Submunition (BAT)
Talley Defense: Mesa, AZ

CH-47 Chinook/Improved Cargo Helicopter (ICH)
Allied Signals: Phoenix, AZ

Comanche
Allied Signal: Phoenix, AZ

Ground-Based Common Sensor (GBCS)
Motorola: Scottsdale, AZ

Joint Surveillance Target Radar (Joint STARS) Ground Station Module (GSM)
Motorola: Scottsdale, AZ

Medium Extended Air Defense System (MEADS)
MEADS Inc. (Hughes Raytheon consortium):
Tucson, AZ

National Missile Defense
Hughes: Tucson, AZ

Night Vision (NV) Image Intensification (I2)
Litton: Tempe, AZ

Satellite Communications (SATCOM)
Motorola: Scottsdale, AZ

Sense and Destroy Armor (SADARM)
Litton: Tempe, AZ

Soldier System
Motorola: Scottsdale, AZ

Stinger
Hughes: Tucson, AZ

Tank Main Gun Ammunition
Motorola: Scottsdale, AZ

TOW Missile
General Motors (Hughes Electronics): Tucson, AZ

ARKANSAS

Army Tactical Missile System (Army TACMS)
Atlantic Research: Camden, AR;
Lockheed Martin Vought Systems:
Camden, AR

Extended Range Multiple Launch Rocket System (ER-MLRS)
Lockheed Martin Vought Systems:
Camden, AR

High Mobility Artillery System (HIMARS)
Lockheed Martin Vought Systems:
Camden, AR

Hydra 70 Rocket System
Lockheed Martin: Camden, AR

Mortar (120 mm)
Pine Bluff Arsenal: Pine Bluff, AR

Multiple Launch Rocket System (MLRS)
Atlantic Research: Camden, AR;
Lockheed Martin Vought Systems:
Camden, AR

Patriot
Atlantic Research Corp.: Camden, AR

CALIFORNIA

Advanced Field Artillery Tactical Data Systems (AFATDS)
SAIC: San Diego, CA

Advanced Tank Armament System (ATAS)
Western Howen Design: Irvine, CA

Airborne Reconnaissance Low (ARL)
TRW: Sunnyvale, CA

All Source Analysis (ASAS)
California Microwave: Woodland Hills, CA;

Jet Propulsion Laboratory: Pasadena, CA;
Lockheed Martin: San Jose, CA;
SAIC: San Diego, CA

Army Data Distribution System (ADDS)
GEC-Marconi: San Marcos, CA;
General Motors (Hughes Electronics):
El Segundo, CA

Army Tactical Missile System (Army TACMS)
Teledyne: Hollister, CA; Los Angeles, CA

Battlefield Combat Identification System (BCIS)
FMC (United Defense LP): San Jose, CA;
TRW: Redondo Beach, CA

Biological Integrated Detection System (BIDS)
Bio Road: Hercules, CA

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle (IFV/CFV)
FMC (United Defense LP): San Jose, CA;
MLS: San Jose, CA

Bradley Fire Support Team (BFIST) Vehicle
FMC (United Defense LP): San Jose, CA

Brilliant Anti-Armor Submunition (BAT)
Northrop Grumman: Hawthorne, CA

Circuit Switch/Message Switch
California Microwave: Woodland Hills, CA;
Litton: Van Nuys, CA

Comanche
TRW: San Diego, CA

Combat Service Support Control System (CSSCS)
TRW: Carson, CA

Command and Control Vehicle (C2V)
FMC (United Defense LP): San Jose, CA;
Lockheed Martin: San Jose, CA

Common Hardware/Software (CHS)
Hewlett Packard: Palo Alto, CA;
SAIC: San Diego, CA;
Sun Microsystems: Mountain View, CA

Deployable Medical Systems (DEPMEDS)
Ohmeda Medical: Pleasanton, CA

Digital Transmission Assemblages
Aydin: San Jose, CA

Driver's Vision Enhancer (DVE)
SAIC: San Diego, CA

Force Projection Tactical Operations Center (FP TOC)
TRW: Dominguez Hills, CA

Force Provider (FP)
Microphor: Willits, CA;
Sierra Army Depot: Sierra, CA

Forward Area Air Defense Command and Control (FAADC²)
TRW: Redondo Beach, CA

Ground-Based Common Sensor (GBCS)
FMC (United Defense LP): Santa Clara, CA

Guardrail/Common Sensor (GR/CS)
TRW: Sunnyvale, CA

Integrated Family of Test Equipment (IFTE)
SAIC: San Diego, CA

Integrated System Control (ISYSCON)
TRW: Carson, CA

Joint Tactical Ground Station (JTACS)
Datron: Simi Valley, CA;
GenCorp (Aerojet): Azusa, CA;
Silicon Graphics: Irvine, CA

Kiowa Warrior
McDonnell Douglas: Monrovia, CA

Longbow Hellfire Missile
TRW: Redondo Beach, CA

Medium Extended Air Defense (MEADS)
MEADS Inc. (Hughes Raytheon consortium):
El Segundo, CA;
MEADS International Inc. (Lockheed
Martin): Aquora Hills, CA

Medium Truck Remanufacture
Accutek: Walnut, CA

Milstar
CommQuest: Enchinitas, CA;
Rantee Microwave & Electronics:
Calabasas, CA;
Titan (Linkabit): San Diego, CA;
TRW: Redondo Beach, CA

Mobile Subscriber Equipment (MSE)
Gould: El Monte, CA

Mortar (120 mm)
ARMTEC: Coachella, CA;
FMS: Los Angeles, CA

**Multi-Purpose Individual
Munition/Short Range Assault Weapon
(MPIM/SRAW)**
GenCorp (Aerojet): Sacramento, CA;
Lockheed Martin: Ranch Santa
Margarita, CA

National Missile Defense
Hughes: El Segundo, CA;
Lockheed Martin: Sunnyvale, CA;
Rockwell: Downey, CA

**NAVSTAR Global Positioning System
(GPS)**
Trumble Navigation: Sunnyvale, CA

**Night Vision (NV) Image
Intensification (I2)**
General Motors (Hughes Electronics):
El Segundo, CA

Patriot
Hughes: Torrance, CA

Satellite Communications (SATCOM)
Magnavox: Torrance, CA;
Titan: San Diego, CA;

**Second Generation Forward Looking
Infrared (2d Gen FLIR)**
General Motors (Hughes Aircraft):
El Segundo, CA

Sense and Destroy Armor (SADARM)
GenCorp (Aerojet): Azusa, CA;
Teledyne: Los Angeles, CA

Sentinel
Hughes: El Segundo, CA; Torrance, CA;
Litton: San Carlos, CA;
Lucas Systems: Palo Alto, CA;
NC Systems: Signal Hill, CA;
SAIC: San Diego, CA;
SoRa Electronics: Torrance, CA;
Watkins Johnson: Palo Alto, CA

Soldier System
Hughes: El Segundo, CA

**Standardized Integrated Command
Post System (SICPS)**
FMC (United Defense LP): San Jose, CA

Tactical High Energy Laser (THEL)
TRW (Space and Technology Division):
Redondo Beach, CA

Tactical Quiet Generators (TQG)
Goodman Ball: Menlo Park, CA

Tank Main Gun Ammunition
ARMTEC: Coachella, CA;
Hexcel: Livermore, CA

**Theater High Altitude Area Defense
(THAAD) System**
Litton Data Systems: Agoura Hills, CA;
Lockheed Martin: Sunnyvale, CA;
TRW: Redondo Beach, CA

Thermal Weapon Sight (TWS)
General Motors: (Hughes
Electronics) El Segundo, CA; (Hughes
Microelectronics Division) Newport
Beach, CA; (Packard Hughes
Interconnects) Irvine, CA;
Santa Barbara Research Center:
Santa Barbara, CA

**TOW Improved Target Acquisition
System (ITAS)**
Santa Barbara Research Center: Goleta, CA

TOW Missile
GenCorp: Azusa, CA;
General Motors (Hughes Electronics):
Goleta, CA

COLORADO

All Source Analysis System (ASAS)
Lockheed Martin: Littleton, CO

Joint Tactical Ground Station (JTACS)
GenCorp (Aerojet): Colorado Springs, CO;
Lockheed Martin Federal Systems:
Boulder, CO

Satellite Communications (SATCOM)
Stanford Electronics: Colorado Springs, CO

Vehicle Teleoperation Capability (VTC)
Omnitech Robotics: Englewood, CO

CONNECTICUT

Black Hawk
United Technologies: Stratford, CT

Comanche
Sikorsky: Stratford, CT

Force Provider (FP)
Dynamics Corp. of America: Bridgeport, CT

Line-of-Sight Antitank (LOSAT)
Allied Signal: Cheshire, CT

Mortar (120 mm)
Fermont: Bridgeport, CT

Small Arms (M16A2 Rifle)
Colt's Manufacturing: Hartford, CT

Small Arms (M4 Carbine)
Colt's Manufacturing: Hartford, CT

Tactical Quiet Generators (TQG)
Fermont: Bridgeport, CT

TOW Missile
Allied Signal: Cheshire, CT

DELAWARE

Protective Mask Family (M 40 Series)
ILC Dover: Dover, DE

FLORIDA

Apache Longbow
Lockheed Martin: Orlando, FL

**Army Tactical Missile System (Army
TACMS)**
Honeywell: Clearwater, FL

Chemical Agent Monitor (CAM)
Intellitec Division (Technical Products
Group): DeLand, FL

Close Combat Tactical Trainer (CCTT)
ECC International: Orlando, FL;
Lockheed Martin: Orlando, FL;
Pulau Electronics: Orlando, FL

Comanche
Lockheed Martin: Orlando, FL

Command and Control Vehicle (C2V)
Brunswick: DeLand, FL

Digital Transmission Assemblages
Group Technologies: Tampa, FL;
Harris Corp.: Melbourne, FL

Javelin
ECC International: Orlando, FL;
Lockheed Martin: Orlando, FL

Joint Tactical Terminal (JTT)
E-Systems: St. Petersburg, FL

Laser HELLFIRE
Lockheed Martin: Ocala, FL; Orlando, FL

Line-of-Sight Antitank (LOSAT)
Lockheed Martin Vought Systems:
Orlando, FL

Longbow Hellfire Missile
Lockheed Martin: Orlando, FL
**Medium Extended Air Defense System
(MEADS)**
MEADS International Inc. (Lockheed
Martin Integrated Systems):
Orlando, FL

Milstar
Harris: Melbourne, FL

**Night Vision (NV) Image
Intensification (I2)**
Lockheed Martin: Orlando, FL

Paladin
Honeywell: St. Petersburg, FL

Palletized Load System (PLS)
OTC Trailer: Bradenton, FL

Patriot
Honeywell: Clearwater, FL;
Parsvant: Melbourne, FL

Remote Sensing Chemical Agent
Detection (M2I)

Intellitec: DeLand, FL

Satellite Communications (SATCOM)

Harris: Melbourne, FL

Sentinel

Lockheed Martin: Clearwater, FL

Single Channel Ground and Airborne
Radio System (SINCGARS)

General Dynamics: Tallahassee, FL;

Talla-Comm: Tallahassee, FL

Stinger

CHIP Supply: Orlando, FL

Tactical Unmanned Aerial Vehicle
(TUAV)

Alliant Techsystems: Clearwater, FL

Tank Main Gun Ammunition

Alliant Technology: Clearwater, FL;

Hercules: Clearwater, FL;

Olin: St. Petersburg, FL

TOW Improved Target Acquisition
System (ITAS)

Keltec: Ft. Walton Beach, FL;

OMI: Melbourne, FL

Volcano

Brunswick: DeLand, FL;

Intellitech: DeLand, FL

GEORGIA

Bradley M2 Infantry/M3 Cavalry

Fighting Vehicle (IFV/CFV)

HAC: LaGrange, GA

Laser HELLFIRE

Rockwell: Duluth, GA

Mortar (120 mm)

Brockway Standard: Homerville, GA

Patriot

Rockwell: Duluth, GA

Thermal Weapon Sight (TWS)

General Motors (Hughes Georgia Inc.):

LaGrange, GA

IDAHO

Abrams Tank

LITCO: Idaho Falls, ID

ILLINOIS

Family of Medium Tactical Vehicles
(FMTV)

Caterpillar: Peoria, IL;

McLaughlin: Moline, IL

Force Provider (FP)

IME: Duva, IL

Mortar (120 mm)

Olin: East Alton, IL

Volcano

Nomura Enterprise: Rock Island, IL

INDIANA

Abrams Tank

Allison Transmission: Indianapolis, IN

Advanced Field Artillery Tactical Data
System (AFATDS)

Hughes: Fort Wayne, IN

All Source Analysis (ASAS)

Magnavox: Fort Wayne, IN

Army Data Distribution System
(ADDS)

Bowmar Instrument: Fort Wayne, IN;

HAC/Magnavox: Fort Wayne, IN;

ITT: Fort Wayne, IN

Battlefield Combat Identification
System (BCIS)

Magnavox: Fort Wayne, IN

Comanche

Rolls Royce/Allison Engine: Indianapolis, IN

Command and Control Vehicle (C2V)

Cummins Engine: Columbus, IN

Common Hardware/Software (CHS)

Magnavox: Fort Wayne, IN

Family of Medium Tactical Vehicles
(FMTV)

Allison Engines: Indianapolis, IN

Ground-Based Common Sensor
(GBCS)

Magnavox: Fort Wayne, IN

High Mobility Multipurpose Wheeled
Vehicle (HMMWV)

AM General: South Bend, IN

Joint Tactical Terminal (JTT)

Hughes: Fort Wayne, IN

Kiowa Warrior

Allison Engines: Indianapolis, IN

M113 Family of Vehicles (FOV)

Allison Transmission: Indianapolis, IN

Medium Truck Remanufacture

Allison Transmissions: Indianapolis, IN;

AM General Corporation: South Bend, IN;

Caterpillar, Inc.: Mossville, IN

Palletized Load System (PLS)

Allison: Indianapolis, IN

Satellite Communications (SATCOM)

Magnavox: Fort Wayne, IN

Single Channel Ground and Airborne
Radio System (SINCGARS)

ITT: Fort Wayne, IN

IOWA

Army Data Distribution System (ADDS)

Rockwell (Defense Electronics Division):

Cedar Rapids, IA

NAVSTAR Global Positioning System
(GPS)

Rockwell: Cedar Rapids, IA

Tank Main Gun Ammunition

Mason and Hangar: Middletown, IA

TOW Missile

Mason and Hangar: Middletown, IA

KANSAS

Guardrail/Common Sensor (GR/CS)

Raytheon (Beech Aircraft): Wichita, KS

KENTUCKY

Deployable Medical Systems
(DEPMEDS)

Outdoor Venture: Stearns, KY

Force Provider (FP)

Outdoor Venture: Stearns, KY

Mobile Subscriber Equipment (MSE)

KECO Industries: Florence, KY

Tactical Quiet Generators (TQG)

KECO Industries: Florence, KY

LOUISIANA

Armored Security Vehicle (ASV)

Textron (Marine and Land Systems

Division): New Orleans, LA

MAINE

Small Arms (MK-19-3 40 mm

Automatic Grenade Launcher)

Duchossois Industries (Saco Defense):

Saco, ME

MARYLAND

Aerostat

Northrop Grumman: Baltimore, MD

Airborne Reconnaissance Low (ARL)

California Microwave: Belcamp, MD

Airborne Standoff Minefield Detection
System (ASTAMIDS)

Westinghouse: Baltimore, MD

Apache Longbow

Northrop Grumman: Linthicum, MD

Biological Integrated Detection System
(BIDS)

Environmental Technology Group:

Baltimore, MD

Brilliant Anti-Armor Submunition
(BAT)

NG Electronic Sensors & Systems

Division: Baltimore, MD

Command and Control Vehicle (C2V)

Airflow: Fredericktown, MD

Longbow Hellfire Missile

Northrop Grumman: Baltimore, MD

Satellite Communications (SATCOM)

Lockheed Martin: Bethesda, MD

Smoke Generator (M56)

Robotic Systems Technology:

Westminster, MD

Smoke Generator (M58)

Robotic Systems Technology:

Westminster, MD

Standard Army Management
Information Systems (STAMIS)

Lockheed Martin: Bethesda, MD

Standardized Integrated Command
Post System (SICPS)

Gichner Systems Group: Hunt Valley, MD

Tactical Endurance Synthetic Aperture
Radar (TESAR)

Northrop Grumman: Baltimore, MD

MASSACHUSETTS

Advanced Field Artillery Tactical Data
System (AFATDS)

GTE: Taunton, MA

Aerostat

Hughes Raytheon: Bedford, MA

Airborne Standoff Minefield Detection
System (ASTAMIDS)

Raytheon: Tewksbury, MA

All Source Analysis System (ASAS)

Lockheed Martin: Pittsfield, MA

Biological Integrated Detection System (BIDS)

Barry Controls: Brighton, MA;
Brucker Instruments: Billerica, MA;
Systems Research Corporation:
Burlington, MA

Black Hawk

General Electric: Lynn, MA

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle (IFV/CFV)

Lockheed Martin: Pittsfield, MA

Brilliant Anti-Armor Submunition (BAT)

Raytheon: Sudbury, MA

Circuit Switch/Message Switch

GTE: Taunton, MA

Combat Service Support Control System (CSSCS)

GTE: Taunton, MA

Common Hardware/Software (CHS)

GTE: Taunton, MA

Digital Transmission Assemblages

Raytheon: Marlboro, MA

Extended Range Multiple Launch Rocket System (ER-MLRS)

Raytheon: Tewksbury, MA

Hornet

Textron (*Textron Defense Systems*):
Wilmington, MA

Integrated System Control (ISYSCON)

ACSI: Burlington, MA;
BBN Systems and Technologies:
Cambridge, MA;
GTE: Taunton, MA

Line of Sight Antitank (LOSAT)

Lockheed Martin Vought Systems:
Cambridge, MA

Maneuver Control System (MCS)

GTE: Taunton, MA

Medium Extended Air Defense System (MEADS)

MEADS Inc. (*Hughes Raytheon consor-
tium*): Bedford, MA

Milstar

Raytheon: Marlboro, MA

Mobile Subscriber Equipment (MSE)

GTE: Taunton, MA;
Raytheon: Marlboro, MA

National Missile Defense

Raytheon: Bedford, MA

Patriot

GTE: Taunton, MA;
Raytheon: Bedford, MA

Satellite Communications (SATCOM)

GTE: Taunton, MA;
Raytheon: Marlborough, MA

Sense and Destroy Armor (SADARM)

Alpha Industries: Woburn, MA

Sentinel

MA/COM: Burlington, MA;
Varian: Beverly, MA

Tank Main Gun Ammunition

Nuclear Metals: Concord, MA

Theater High Altitude Area Defense (THAAD) System

Lockheed Martin IRS: Lexington, MA;
Raytheon: Bedford, MA; Waltham, MA

MICHIGAN

Abrams Tank

General Dynamics: Sterling Heights, MI

Advanced Tank Armament System (ATAS)

General Dynamics: Sterling Heights, MI

Battlefield Combat Identification System (BCIS)

General Dynamics: Sterling Heights, MI

Crusader

General Dynamics: Sterling Heights, MI

High Mobility Multipurpose Wheeled Vehicle (HMMWV)

AM General: Livonia, MI

M113 Family of Vehicles (FOV)

Detroit Diesel: Detroit, MI

Medium Truck Remanufacture

Hayes Wheels: Romulus, MI;
Michelin Tire: Troy, MI

Mobile Subscriber Equipment (MSE)

AM General: Livonia, MI

Nuclear, Biological, and Chemical Reconnaissance System (NBCRS)-Fox

General Dynamics: Warren, MI

Palletized Load System (PLS)

Detroit Diesel: Detroit, MI;
Rockwell: Troy, MI

Wolverine

General Dynamics: Sterling Heights, MI

MINNESOTA

Army Tactical Missile System (Army TACMS)

Honeywell: Minneapolis, MN

Biological Integrated Detection System (BIDS)

Power & Engine Manufacturing:
Minneapolis, MN;

Thermal Systems: St. Paul, MN

Brilliant Anti-Armor Submunition (BAT)

Alliant Techsystem: Hopkins, MN
Honeywell: Minneapolis, MN

Crusader

FMC (*United Defense LP*):
Minneapolis, MN

Patriot

Honeywell: Minneapolis, MN

Protective Mask Family

TSI: St. Paul, MN

Sense and Destroy Armor (SADARM)

Alliant Techsystems: Hopkins, MN

Soldier System

Honeywell: Minneapolis, MN

Stinger

Honeywell: Minneapolis, MN

Tactical Unmanned Aerial Vehicle (TUAV)

Alliant Techsystems: Hopkins, MN;
Cirrus Design: Duluth, MN

Tank Main Gun Ammunition

Alliant TechSystems: Brooklyn Park, MN

Volcano

Alliant TechSystems: Edina, MN

MISSISSIPPI

Army Data Distribution System (ADDS)

General Motors (*Hughes Electronics*):
Forrest, MS

Sentinel

Hughes: Forrest, MS

MISSOURI

Bradley Fire Support Team (BFIST) Vehicle

Systems Electronics Corp.: St. Louis, MO

Force Provider (FP)

EASI: St. Louis, MO

Guardrail/Common Sensor (GR/CS)

ESCO: St. Louis, MO

Heavy Equipment Transporter System (HETS)

Systems and Electronics: St. Louis, MO

TOW Missile

Eagle Picher: Joplin, MO

MONTANA

Sentinel

TMS: Polson, MT

Volcano

S & K Electronics: Roman, MT

NEBRASKA

Mobile Subscriber Equipment (MSE)

Telex Communications: Lincoln, NE

NEVADA

Patriot

Mountaingale: Reno, NV

Tactical Unmanned Aerial Vehicle (TUAV)

GS Engineering: Incline Village, NV

NEW HAMPSHIRE

Ground-Based Common Sensor (GBCS)

Lockheed Martin: Hudson, NH

Night Vision (NV) Image Intensification (I2)

Lockheed Martin (*Lockheed Sanders Corp.*): Nashua, NH

Patriot

Lockheed/Sanders: Merrimack, NH

NEW JERSEY

Apache Longbow

Allied Signal: Teterboro, NJ

Army Data Distribution System (ADDS)

GEC-Marconi: Totowa, NJ

Army Tactical Missile System (Army TACMS)

Simmonds Precision: Cedar Knolls, NJ

Brilliant Anti-Armor Submunition (BAT)

Alliant Signal: Teterboro, NJ

Digital Transmission Assemblages
Transistor Devices: Cedar Knolls, NJ

Longbow Hellfire Missile
GEC-Marconi: Wayne, NJ

Maneuver Control System (MCS)
CSC: Eatontown, NJ;
GTE (Telos): Shrewsbury, NJ;
Lockheed Martin: Tinton Falls, NJ;
MITRE: Eatontown, NJ;
Telos: Shrewsbury, NJ

Milstar
Lockheed Martin: Camden, NJ

Multiple Launch Rocket System (MLRS)
Allied Signal: Teterboro, NJ

Radiac
Nuclear Research: Dover, NJ

Standard Army Management Information Systems (STAMIS)
Computer Sciences: Moorestown, NJ

Tactical Quiet Generators (TQG)
Dewey Electronics: Oakton, NJ

Tank Main Gun Ammunition
Alliant-Terralmatic Operations: Totowa, NJ

NEW MEXICO

Circuit Switch/Message Switch
Laguna Industries: Albuquerque, NM

Digital Transmission Assemblages
Laguna Industries: Laguna Pueblo, NM

Kiowa Warrior
Honeywell: Albuquerque, NM

Patriot
J.L. Rust: Albuquerque, NM

Stinger
Hughes: Farmington, NM

Theater High Altitude Area Defense (THAAD) System
Lockheed Martin: White Sands, NM

NEW YORK

Advanced Quick Fix (AQF)
Lockheed Martin: Owego, NY

Biological Integrated Detection System (BIDS)
Harris: Rochester, NY

Common Hardware/Software (CHS)
Stonebrook Group (MILTOPE): Melville, NY

Deployable Medical Systems (DEPMEDS)
Eastman Kodak: Rochester, NY

Ground-Based Common Sensor (GBCS)
Lockheed Martin: Owego, NY;
IBM: Owego, NY

Guardrail/Common Sensor (GR/CS)
IBM: Owego, NY

Integrated Family of Test Equipment (IFTE)
Northrop-Grumman: Great River, NY

Mortar (120 mm)
Watervliet Arsenal: Watervliet, NY

Paladin
Watervliet Arsenal: Watervliet, NY

Thermal Weapon Sight (TWS)
Aeroflex Laboratories: Plainview, NY

TOW Improved Target Acquisition System (ITAS)
Lockheed Martin: Syosset, NY

NORTH CAROLINA

Integrated System Control (ISYSCON)
GTE: Raleigh, NC

OHIO

Abrams Tank
General Dynamics: Lima, OH

Aerostat
Lockheed Martin: Akron, OH

Army Tactical Missile System (Army TACMS)
KDI: Cincinnati, OH

Biological Integrated Detection System (BIDS)
Battelle: Columbus, OH

Deployable Medical Systems (DEPMEDS)
Picker: Cleveland, OH

Extended Range Multiple Launch Rocket System (ER-MLRS)
KDI: Cincinnati, OH

Family of Medium Tactical Vehicles (FMTV)
Rockwell International: Newark, OH

High Mobility Multipurpose Wheeled Vehicle (HMMWV)
O'Gara, Hess and Eisenhardt: Fairfield, OH

Mortar (120 mm)
KDI: Cincinnati, OH

Satellite Communications (SATCOM)
Cincinnati Electronics: Cincinnati, OH

TOW Missile
American Steel & Wire: Cleveland, OH

Wolverine
General Dynamics: Lima, OH

PENNSYLVANIA

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle (IFV/CFV)
FMC (United Defense LP): York, PA

CH-47 Chinook/Improved Cargo Helicopter (ICH)
Boeing: Philadelphia, PA

Comanche
Boeing: Philadelphia, PA

Command and Control Vehicle (C2V)
FMC (United Defense LP): York, PA

Deployable Medical Systems (DEPMEDS)
Airtacs: Red Lion, PA;
Engineered Systems: Trappe, PA

Digital Transmission Assemblages
Gichner Systems Group: Dallastown, PA;
Tobyhanna Army Depot: Tobyhanna, PA

Grizzly
FMC (United Defense LP): York, PA

Hercules
FMC (United Defense LP): York, PA

Joint Tactical Ground Station (JTACS)
Gichner Systems Group: Dallastown, PA

Mobile Subscriber Equipment (MSE)
Magnavox: Philadelphia, PA

Mortar (120 mm)
Duchossois Industries: Scranton, PA;
Lockheed Martin: Archibald, PA;
Scranton Army Ammunition Plant: Scranton, PA

Multiple Launch Rocket System (MLRS)
FMC (United Defense LP): York, PA

Paladin
FMC (United Defense LP): Chambersburg, PA;
Letterkenny Army Depot: Chambersburg, PA;
Sechan Electronics: Littiz, PA

Palletized Load System (PLS)
Grove Crane: Shady Grove, PA

Patriot
Litton: Williamsport, PA

Protective Mask Family (M40 Series)
Mine Safety Appliance: Pittsburgh, PA

Soldier System
GENTEX: Carbondale, PA

Standardized Integrated Command Post System (SICPS)
Letterkenny Army Depot: Letterkenny, PA;
Tobyhanna Army Depot: Tobyhanna, PA

Tank Main Gun Ammunition
Bulova: Lancaster, PA;
Olin-Flinchbaugh: Red Lion, PA

TOW Missile
Cabot: PA;
Kaiser Aluminum: Erie, PA;
Lockheed Martin: Archibald, PA

SOUTH CAROLINA

Family of Medium Tactical Vehicles (FMTV)
Michelin: Greenville, SC

Mobile Subscriber Equipment (MSE)
FN Manufacturing: Columbia, SC

Small Arms (M16A2 Rifle)
FN Manufacturing: Columbia, SC

Small Arms (M249 Squad Automatic Weapon)
FN Manufacturing: Columbia, SC

TENNESSEE

Mortar (120 mm)
MMOS Milan Army Ammunition Plant: Milan, TN;
United Ammunition Container: Milan, TN

Standardized Integrated Command Post System (SICPS)
Camel: Knoxville, TN

Tank Main Gun Ammunition
GenCorp (Aerojet): Jonesboro, TN

TEXAS

Abrams Tank
Texas Instruments: Dallas, TX

Advanced Tank Armament System (ATAS)
Texas Instruments: Plano, TX

All Source Analysis (ASAS)
MANTECH: Killeen, TX

Army Tactical Missile System (Army TACMS)
Lockheed Martin Vought Systems: Dallas, TX; Horizon City, TX

Bradley M2 Infantry/M3 Cavalry Fighting Vehicle (IFV/CFV)
Texas Instruments: McKinney, TX

Brilliant Anti-Armor Submunition (BAT)
Lockheed Martin Vought Systems: Grand Prairie, TX

Driver's Vision Enhancer (DVE)
Outsource Solution: McKinney, TX;
Texas Instruments: Dallas, TX

Extended Range Multiple Launch Rocket System (ER-MLRS)
Lockheed Martin Vought Systems: Dallas, TX

Family of Medium Tactical Vehicles (FMTV)
Scott Manufacturing: Lubbock, TX;
Stewart & Stevenson Services: Houston, TX

High Mobility Artillery Rocket System (HIMARS)
Lockheed Martin Vought Systems: Dallas, TX

Javelin
Texas Instruments: Lewisville, TX

Joint Tactical Ground Station (JTACS)
Response Service and Innovation: Austin, TX

Kiowa Warrior
Bell Helicopter Textron: Fort Worth, TX

Line-of-Sight Antitank (LOSAT)
Lockheed Martin Vought Systems: Dallas, TX;
Texas Instruments: Dallas, TX

M113 Family of Vehicles (FOV)
FMC (United Defense LP): Texarkana, TX

Milstar
Rockwell: Richardson, TX

Mortar (120 mm)
Red River Army Depot: Texarkana, TX

Multiple Launch Rocket System (MLRS)
Day & Zimm: Texarkana, TX;
Lockheed Martin Vought Systems: Dallas, TX

Night Vision (NV) Image Intensification (I2)
Phototelesis: San Antonio, TX;

Texas Instruments: McKinney, TX;
TRACOR Aerospace: Austin, TX

Patriot
Lockheed Martin Vought Systems: Grand Prairie, TX

Second Generation Forward Looking Infrared (2d Gen FLIR)
Texas Instruments: McKinney, TX

Sentinel
KINTEC: Dallas, TX

Tactical Quiet Generators (TQG)
MCII: Dallas, TX

TOW Improved Target Acquisition System (ITAS)
Cercon: Hillsboro, TX;
IMO (VARO): Garland, TX;
Texas Instruments: McKinney, TX

TOW Missile
Texas Instruments: Dallas, TX

UTAH

Close Combat Tactical Trainer (CCTT)
Evans & Sutherland: Salt Lake City, UT

Guardrail/Common Sensor (GR/CS)
UNISYS: Salt Lake City, UT

Hydra 70 Rocket System
Thiokol: Brigham City, UT

VERMONT

Crusader
Lockheed Martin: Burlington, VT

Mortar (120 mm)
Lockheed Martin Vought Systems: Burlington, VT

VIRGINIA

All Source Analysis System (ASAS)
BDM: McLean, VA;
Electronic Warfare Associates: Herndon, VA;
Logicon: Arlington, VA;
MITRE: McLean, VA;
Mystech: Falls Church, VA;
Sytex: McLean, VA

Army Global Command and Control System (AGCCS)
Lockheed Martin: Springfield, VA

Army Tactical Missile System (Army TACMS)
Atlantic Research: Gainesville, VA

Biological Integrated Detection System (BIDS)

Booz Allen & Hamilton: McLean, VA;
Kaman Sciences: Alexandria, VA

Combat Service Support Control System (CSSCS)
LMC: Springfield, VA

Crusader
EDS: Herndon, VA;
PRC: McLean, VA

Deployable Medical Systems (DEPMEDS)
Brunswick: Marion, VA

Enhanced Trackwolf (ET)
Engineering Research Associates: Vienna, VA

Hydra 70 Rocket System
Hercules: Radford, VA;
Radford Army Ammunition Plant: Radford, VA

Integrated Meteorological System (IMETS)
Logicon: Arlington, VA;
Sytex: McLean, VA

Joint Service Lightweight Integrated Suit Technology (JSLIST)
Battelle: Stafford, VA

Mortar (120 mm)
Hercules: Radford, VA;
Radford Army Ammunition Plant: Radford, VA

Night Vision (NV) Image Intensification (I2)
ITT: Roanoke, VA

Patriot
Atlantic Research: Gainesville, VA

Sentinel
Brunswick: Marion, VA;
Electro-Tech: Blacksburg, VA

Standard Army Management Information Systems (STAMIS)
PRC: McLean, VA

Standardized Integrated Command Post System (SICPS)
Brunswick: Marion, VA

Stinger
Atlantic Research: Gainesville, VA

Tank Main Gun Ammunition
Alliant-Radford: Radford, VA;
Hercules: Radford, VA;
Radford Army Ammunition Plant: Radford, VA

TOW Missile
Alliant Techsystems: VA

WASHINGTON

Brilliant Anti-Armor Submunition (BAT)
Olin: Redmond, WA

Integrated Meteorological System (IMETS)
Logicon: Tacoma, WA

Line-of-Sight Antitank (LOSAT)
Lockheed Martin Vought Systems: Bellevue, WA

WEST VIRGINIA

Tank Main Gun Ammunition
Hercules: Rocket City, WV

WISCONSIN

Army Tactical Missile System (Army TACMS)
Spincraft: New Berlin, WI

Deployable Medical Systems (DEPMEDS)
BIOCHEM International: Waukesha, WI

Heavy Equipment Transporter System (HETS)
Oshkosh Truck: Oshkosh, WI

Mortar (120 mm)
Accudyne: Janesville, WI

Palletized Load System (PLS)
Oshkosh Truck: Oshkosh, WI;
Steeltech: Milwaukee, WI

Tactical Quiet Generators (TQG)
T and J Manufacturing: Oshkosh, WI

OTHER COUNTRIES

CANADA

Thermal Weapon Sight (TWS)
General Motors (Hughes Elcan Optical Technologies): Ontario, Canada

TOW Improved Target Acquisition System (ITAS)
DY4 Systems: Ontario, Canada

FRANCE

Mobile Subscriber Equipment (MSE)
Thomson CSF: Laval, Cholet & Toulouse, France

GERMANY

Medium Extended Air Defense System (MEADS)

Deutsch Aerospace: Germany;
Siemens: Germany

Nuclear, Biological, and Chemical
Reconnaissance System (NBCRS)-Fox
Thyssen Henschel: Germany

Thermal Weapon Sight (TWS)
Zeis Eltro Optronics: Germany

Wolverine
MAN GHH: Dusseldorf: Germany

ISRAEL

Night Vision (NV) Image
Intensification (I2)
Elbit Ltd: Haifa, Israel

ITALY

Medium Extended Air Defense System
(MEADS)
Alenia: Italy

SWEDEN

Mobile Subscriber Equipment (MSE)
Ericsson Radio Systems AB: Molndal,
Sweden

UNITED KINGDOM

Automatic Chemical Agent
Detector/Alarm (ACADA)
Graseby Dynamics: Watford, Herts, U.K.

Abrams:
Project Manager
Abrams Tank System
ATTN: SFAE-ASM-AB
Warren, MI 48397-5000

Advanced Field Artillery Tactical Data System (AFATDS):
Product Manager
AFATDS
ATTN: SFAE-C3S-F5
Ft. Monmouth, NJ 07703

Advanced Tank Armament System (ATAS):
Project Manager
Tank Main Armament Systems (PM-TMAS)
ATTN: SFAE-AR-TMA
Picatinny Arsenal, NJ 07806-5000

Advanced Quick Fix (AQF):
Project Manager
Signals Warfare
ATTN: SFAE-IEW-SG
Vint Hill Farms Station
Warrenton, VA 22186-5116

Aerostat:
Project Manager
U.S. Army Space and Strategic Defense Command
P.O. Box 1500
Huntsville, AL 35807

Air Defense Artillery (ADA) Brigade Tactical Operations Centers (TOCs):
Project Manager
U.S. Army Missile Command
ATTN: SFAE-C3S-AD
Redstone Arsenal, AL 35898-5600

Airborne Reconnaissance Low (ARL):
Project Manager
Signals Warfare
ATTN: SFAE-IEW-SG
Vint Hill Farms Station
Warrenton, VA 22186-5116

Airborne Standoff Minefield Detection System (ASTAMIDS):
Project Manager
Mines, Countermine, and Demolitions Building 162N
Picatinny Arsenal, NJ 07806-5000

All Source Analysis System (ASAS):
Project Manager
All Source Analysis System
1616 Anderson Rd.
McLean, VA 22102-1616

Apache Longbow:
Product Manager
Longbow Apache
ATTN: SFAE-AV-LB
4300 Goodfellow Boulevard.
St. Louis, MO 63120-1795

Armored Security Vehicle (ASV):
Program Executive Officer
Tactical Wheeled Vehicles
ATTN: SFAE-TWV-LTV
Warren, MI 48397-5000

Army Data Distribution System (ADDS):
Project Manager
TRCS
ATTN: SFAE-C3S-TRC
Ft. Monmouth, NJ 07703

Army Global Command and Control System (AGCCS):
Program Executive Office
Command, Control and Communications
Project Manager, STCCS
6052 Meade Road, Suite 101
Ft. Belvoir, VA 22060-5260

Army Tactical Missile System (Army TACMS):
Project Manager
Army TACMS
ATTN: SFAE-MSL-AT
Redstone Arsenal, AL 35898-5650

Automatic Chemical Agent Detector/Alarm (ACADA):
Product Manager
NBC Defense Systems
ATTN: AMCPM-NN
Aberdeen Proving Ground, MD 21010-5423

Office of Program Director
NBC Defense
ATTN: AMSCB-BD
Aberdeen Proving Ground, MD 21010-5423

Joint Program Office for Biological Defense Systems
ATTN: SFAE-BD/Skyline #3
5201 Leesburg Pike
Falls Church, VA 22041-3203

Battlefield Combat Identification System (BCIS):
Project Manager
Combat Identification
ATTN: SFAE-IEW-CI-BCIS
Ft. Monmouth, NJ 07703

Project Manager
Combat Identification
Skyline 6, Suite 309
Falls Church, VA 22041

Biological Integrated Detection System (BIDS):
Project Manager
NBC Defense Systems
ATTN: AMCPM-NN
Aberdeen Proving Ground, MD 21010-5423

Office of Program Director
NBC Defense
ATTN: AMSCB-BD
Aberdeen Proving Ground, MD 21010-5423

Joint Program Office for Biological Defense Systems
ATTN: SFAE-BD/Skyline #3
5201 Leesburg Pike
Falls Church, VA 22041-3203

Black Hawk:
Project Manager
Utility Helicopters
ATTN: SFAE-AV-BH
4300 Goodfellow Boulevard
St. Louis, MO 63120-1798

Bradley Fire Support Team (BFIST) Vehicle:
Product Manager
Bradley Fighting Vehicle System
ATTN: SFAE-ASM-BV
Warren, MI 48397-5000

Bradley M2 Infantry/ M3 Cavalry Fighting Vehicle (IFV/CFV):
Program Manager
Bradley Fighting Vehicle System
ATTN: SFAE-ASM-BV
Warren, MI 48397-5000

Brilliant Anti-Armor Submunition (BAT):
Project Manager
Army TACMS-BAT
ATTN: SFAE-MSL-AB
Redstone Arsenal, AL 35898-7998

CH-47D Chinook/Improved Cargo Helicopter (ICH)
Project Manager
Cargo Helicopters
ATTN: SFAE-AV-CH
4300 Goodfellow Blvd
St. Louis, MO 63120-1795

Chemical Agent Monitor (CAM):
Project Manager
NBC Defense Systems
ATTN: AMCPM-NN
Aberdeen Proving Ground, MD 21010-5423

Office of Program Director
NBC Defense
ATTN: AMSCB-BD
Aberdeen Proving Ground, MD 21010-5423

Joint Program Office for Biological Defense Systems
ATTN: SFAE-BD/Skyline #3
5201 Leesburg Pike
Falls Church, VA 22041-3203

Circuit Switch And Message Switch:
Project Manager
JTACS
ATTN: SFAE-C3S-JTC
Ft. Monmouth, NJ 07703

CECOM Commodity Command
ATTN: AMSEL-LC-MMR-T
Ft. Monmouth, NJ 07703

Close Combat Tactical Trainer (CCTT):
Product Manager
Central Florida Research Park
ATTN: AMCPM-CCTT
12350 Research Parkway
Orlando, FL 32826-3276

Army Materiel Command (AMC)
5001 Eisenhower Avenue
ATTN: AMCRD-S
Alexandria, VA 22333-0001

Comanche:
Project Manager
Comanche
ATTN: SFAE-AV-RAH (Bldg. 105)
4300 Goodfellow Boulevard
St. Louis, MO 63120-1795

Combat Service Support Control System (CSSCS):
Product Manager
CSSCS
6020 Meade Rd., Suite 103
Ft. Belvoir, VA 22060-5259

Command and Control Vehicle (C2V):
Product Manager
Command and Control Vehicle
ATTN: SFAE-ASM-BV
Warren, MI 48397-5000

Common Hardware/Software (CHS):
Project Manager
Common Hardware/ Software
ATTN: SFAE-C3S-CHS
Ft. Monmouth, NJ 07703-5402

Crusader:
Project Manager
Crusader
ATTN: SFAE-FAS-CR
Picatinny Arsenal, NJ 07806-5000

Deployable Medical Systems (DEPMEDS):
Commander
U.S. Army Medical Material Agency
ATTN: MCMR-MM-R
Frederick, MD 21702-5001

HQ, U.S. Army Aviation and Troop Command
4300 Goodfellow Boulevard.
ATTN: AMSAT-W-TV
St. Louis, MO 63120-1798

Digital Transmission Assemblages:
Project Manager
JTACS (P)
ATTN: SFAE-CM-MSC-CTS
Ft. Monmouth, NJ 07703

Commodity Command
CECOM-DMM
ATTN: AMSEL-LC-MMR-T
Ft. Monmouth, NJ 07703

Driver's Vision Enhancer (DVE):
Project Manager
NV/RSTA
10221 Burbeck Road, Suite 430
Ft. Belvoir, VA 22060-5806

Enhanced Trackwolf (ET):
Project Manager
Signals Warfare
ATTN: SFAE-IEW-SG
Vint Hill Farms Station
Warrenton, VA 22186-5116

Extended Range Multiple Launch Rocket System (ER-MLRS):
Project Manager
Multiple Launch Rocket System
ATTN: SFAE-MSL-ML-PGM
Redstone Arsenal, AL 35898-5650

Family of Medium Tactical Vehicles (FMTV):
Project Manager
FMTV
ATTN: SFAE-TWV-FMTV
Warren, MI 48397-5000

Force Projection Tactical Operations Center (FP TOC):
Product Manager
ADCCS Project Office
ATTN: SFAE-C3S-AD-CP
Redstone Arsenal, AL 35898

Force Provider (FP):
Product Manager
HQ, U.S. Army Aviation and Troop Command
ATTN: AMCPM-FP
4300 Goodfellow Boulevard
St. Louis, MO 63120-1798

Forward Area Air Defense Command and Control (FAADC²):
Product Manager
ADCCS Project Office
ATTN: SFAE-C3S-AD
Redstone Arsenal, AL 35898

Grizzly:
Project Manager
Combat Mobility Systems
ATTN: SFAE-ASM-CV-B
Warren, MI 48397-5000

Ground Based Common Sensor (GBCS):
Project Manager
Signals Warfare
ATTN: SFAE-IEW-SG
Vint Hill Farms Station
Warrenton, VA 22186-5116

Guardrail/ Common Sensor (GR/CS):
Program Manager
Signals Warfare
ATTN: SFAE-IEW-SG
Vint Hill Farms Station
Warrenton, VA 22186-5116

Heavy Equipment Transporter System (HETS):
Program Executive Officer
Combat Support
ATTN: SFAE-CS
Warren, MI 48397-5000

Program Manager
Heavy Tactical Vehicles
ATTN: SFAE-CS-TVH
Warren, MI 48397-5000

Hercules:
Project Manager,
Combat Mobility Systems
ATTN: SFAE-ASM-CV-R
Warren, MI 48397-5000

High Mobility Artillery Rocket System (HIMARS):
Project Manager
MLRS
ATTN: SFAE-MSL-ML-SP
Redstone Arsenal, AL 35896

High Mobility Multipurpose Wheeled Vehicle (HMMWV):
Program Executive Officer
Tactical Wheeled Vehicles
ATTN: SFAE-TWV
Warren, MI 48397-5000

Project Manager
Tactical Vehicle Special Programs
ATTN: SFAE-CS-TVSP
Warren, MI 48397-5000

Hornet:
Project Manager
Mines, Countermine, and Demolitions
ATTN: SFAE-ASM-MCD
Picatinny Arsenal, NJ 07806-5000

HYDRA 70 Rocket System:
Chief, Hydra-70/2.75 Inch Rocket Management Office
ATTN: AMSMC-ASH
Rock Island, IL 61299-6000

Integrated Family of Test Equipment (IFTE):
Product Manager
Automatic Test Support Systems
ATTN: PM-ATSS
Redstone Arsenal, AL 35898-5400

Integrated Meteorological System (IMETS)
Project Manager
White Sands Missile Range
ATTN: AMSAL-IS-FW
White Sands, NM 88002-5501

Integrated System Control (ISYSCON):
Project Manager
JTACS CECOM
ATTN: SFAE-C3S-JTC
(Product Manager, CMS)
Ft. Monmouth, NJ 07703

Javelin:
Project Manager
Javelin
ATTN: SFAE-MSL-AM
Redstone Arsenal, AL 35898-5720

Joint Service Lightweight Integrated Suit Technology (JSLIST):
Project Manager
JSLIST
10401 Totten Road, Suite 121
Fort Belvoir, VA 22060

Joint Surveillance Target Attack Radar System (Joint STARS) Ground Station Module (GSM):
Army Project Manager
Joint STARS
ATTN: SFAE-IEW-JS
Ft. Monmouth, NJ 07703-5304

Joint Tactical Ground Station (JTAGS):
Program Executive Office
Missile Defense
ATTN: SFAE-GPL-TMD-SS-P
P.O. Box 1500
Huntsville, AL 35807-3801

Joint Tactical Terminal (JTT):
Project Manager
Joint STARS
ATTN: SFAE-IEW-JS
Ft. Monmouth, NJ 07703-5304

Kiowa Warrior:
Project Manager
Kiowa Warrior
ATTN: SFAE-AV-ASH-T
4300 Goodfellow Boulevard
St. Louis, MO 63120-1798

Laser HELLFIRE:
Project Manager
Air-to-Ground Missile Systems
ATTN: SFAE-MSL-HD
Redstone Arsenal, AL 35898-5610

Line-of-Sight Antitank (LOSAT):
Project Manager
LOSAT
ATTN: SFAE-ASM-LS
Redstone Arsenal, AL 35898-8051

Longbow HELLFIRE:
Product Manager
Air-to-Ground Missile Systems
ATTN: SFAE-MSL-HD
Redstone Arsenal, AL 35898-5610

M113 Family of Vehicles (FOV):
Product Manager
U.S. Army Tank and Automotive
Command
AMCPM-M113
Warren, MI 48397-5000

Maneuver Control System (MCS):
Project Manager
Operations Tactical Data Systems
ATTN: SFAE-CC-MVR
Ft. Monmouth, NJ 07703-5405
Medium Extended Air Defense System (MEADS):
Project Manager
MEADS
ATTN: SFAE-MD-SM
Redstone Arsenal, AL 35898-5797

Medium Truck Remanufacture:
Program Executive Officer
Tactical Wheeled Vehicles
ATTN: SFAE-TWV-M
Warren, MI 48397-5000

Milstar (Army):
Program Manager
Milstar (Army)
ATTN: SFAE-C3S-MSA
Ft. Monmouth, NJ 07703

Mobile Subscriber Equipment (MSE):
Project Manager
JTACS
ATTN: SFAE-C3S-JTC
Ft. Monmouth, NJ 07703-5210

Mortar (120 mm):
Product Manager
U.S. Armament Research, Development,
and Engineering Center
ATTN: AMCPM-MO
Picatinny Arsenal, NJ 07806-5000

Multiple Launch Rocket System (MLRS):
Project Manager
MLRS
ATTN: SFAE-MSL-ML
Redstone Arsenal, AL 35896

Multi-Purpose Individual Munition/ Short Range Assault Weapon (MPIM/SRAW):
Product Manager
MPIM/SRAW
ATTN: G31, Naval Surface Warfare
Center
17320 Dahlgren Road
Dahlgren, VA 22448-5100

National Missile Defense (NMD):
Program Executive Office
ATTN: SFAE-MD-NMD
P.O. Box 1500
Redstone Arsenal, AL 358087-5801

NAVSTAR Global Positioning System (GPS):
Project Manager
GPS
ATTN: SFAE-C3-GPS
Ft. Monmouth, NJ 07703

Night Vision/ Reconnaissance, Surveillance & Target Acquisition (NV/RSTA):
Project Manager
NV/RSTA
10221 Burbeck Road, Suite 430
Ft. Belvoir, VA 22060-5806

NBC Reconnaissance System (NBCRS):
Fox:
Project Manager
ATTN: AMCPM-NN
Aberdeen Proving Ground, MD 21010

Paladin:
Product Manager
Paladin/FAASV
ATTN: SFAE-FAS-PAL
Picatinny Arsenal, NJ 07806-5000

Palletized Load System (PLS):
Program Executive Officer
Tactical Wheeled Vehicles
ATTN: SFAE-TWV
Warren, MI 48397-5000

Program Manager
Palletized Load System
ATTN: SFAE-CS-PLS
Warren, MI 48397-5000

Patriot:
Product Manager
ATTN: SFAE-MD-PA
P.O. Box 1500
Huntsville, AL 35807-3801

Protective Mask (M40 Series):
Project Manager
NBC Defense
ATTN: AMCPM-NN
Aberdeen Proving Ground, MD 21010

Radiac:
Project Manager
NBC Defense Systems
ATTN: AMCPM-NN
Aberdeen Proving Ground, MD 21010-5423

Office of Program Director
NBC Defense
ATTN: AMSCB-BD
Aberdeen Proving Ground, MD 21010-5423

Joint Program Office for Biological Defense Systems
ATTN: SFAE-BD/Skyline #3
5201 Leesburg Pike
Falls Church, VA 22041-3203

Remote Sensing Chemical Agent Detection (M21):
Project Manager
NBC Defense Systems
ATTN: AMCPM-NN
Aberdeen Proving Ground, MD 21010-5423

Office of Program Director
NBC Defense
ATTN: AMSCB-BD
Aberdeen Proving Ground, MD 21010-5423

Joint Program Office for Biological Defense Systems
ATTN: SFAE-BD/Skyline #3
5201 Leesburg Pike
Falls Church, VA 22041-3203

Satellite Communications (SATCOM):
Project Manager
SATCOM
ATTN: SFAE-C3S-SC
Ft. Monmouth, NJ 07703

Program Manager
Milstar (Army)
ATTN: SFAE-C3-MSA
Ft. Monmouth, NJ 07703

Second Generation Forward Looking Infrared (FLIR):
Product Manager
GEN II FLIR
10221 Burbeck Road, Suite 430
Ft. Belvoir, VA 22060-5806

Sense and Destroy Armor (SADARM):
Project Manager
Sense and Destroy Armor
ATTN: SFAE-FAS-SD
Picatinny Arsenal, NJ 07806-5000

Sentinel:
Product Manager
FAAD Sensor
ATTN: SFAE-IEW-GSI
Redstone Arsenal, AL 35898-5796

Single Channel Ground and Airborne Radio System (SINCGARS):
Product Manager
TRCS
ATTN: SFAE-C3S-TRC
Ft. Monmouth, NJ 07703

Small Arms (M4 Carbine, M16A2 Rifle, MK19-3 40mm Automatic Grenade Launcher, M249 Squad Automatic Weapon):

Product Manager
Small Arms
U.S. Army Armament Research, Development, and Engineering Center
ATTN: AMCPM-SA
Picatinny Arsenal, NJ 07806-5000

Smoke Generator (M56):

Product Manager
Smoke/Obscurants
ATTN: AMCPM-SM
Aberdeen Proving Ground, MD 21010-5423

Smoke Generator (M58):

Product Manager
Smoke/Obscurants
ATTN: AMCPM-SM
Aberdeen Proving Ground, MD 21010-5423

Soldier System:

Program Manager
Soldier
14050 Dawson Beach Rd.
Woodbridge, VA 22919

ATCOM
4300 Goodfellow Boulevard.
St. Louis, MO 63120

AMCCOM
ATTN: AMSMC-RT
Rock Island, IL 61299

CECOM
ATTN: AMSEL-RD
Ft. Monmouth, NJ 07703

Standard Army Management Information Systems (STAMIS):

Program Executive Office STAMIS
ATTN: SFAE-PS
Stop C-3
Ft. Belvoir, VA 22060-5895

Standardized Integrated Command Post System (SICPS):

Product Manager, Common
Hardware/Software
Product Manager, SICPS
Ft. Monmouth, NJ 07703

Stinger:

FAAD Project Office
ATTN: SFAE-MSL-FAD
Redstone Arsenal, AL 35898-5630

Tactical Endurance Synthetic Aperture Radar (TESAR):

Product Manager
TESAR
Ft. Monmouth, NJ 07703-5000

Tactical High Energy Laser (THEL):

Product Manager
U.S. Army Space and Strategic Defense Command
P.O. Box 1500
Huntsville, AL 35807

Tactical Quiet Generators (TQG):

DoD Project Manager-Mobile Power
Mobile Electric Power
7500 Backlick Road
Springfield, VA 22150-3107

Department of the Army
HQ, U.S. Army Aviation and Troop Command
St. Louis, MO 63120-1798

Tactical Unmanned Aerial Vehicle (TUAV):

Product Manager
Joint Tactical Unmanned Aerial Vehicle
ATTN: PEO-CU-UAV
Redstone Arsenal, AL 35898-5791

Tactical Unmanned Vehicle (TUV):

Product Manager-TUV
Unmanned Ground Vehicles/Systems
JPO
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Redstone Arsenal, AL 31898-8060

Tank Main Gun Ammunition:

Product Manager
Tank Main Armament Systems (PM-TMAS)
ATTN: SFAE-AR-TMA
Picatinny Arsenal, NJ 07806-5000

Task Force XXI Tactical Operations Centers (TOCs)

Product Manager
U.S. Army Missile Command
ATTN: SFAE-C3S-AD
Redstone Arsenal, AL 35898-5600

Theater High Altitude Area Defense (THAAD) System:

Project Manager
ATTN: SFAE-MD-THA
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Huntsville, AL 35807-3801

Thermal Weapon Sight (TWS):

Project Manager
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10221 Burbeck Road, Suite 430
Ft. Belvoir, VA 22060-5806

TOW Improved Target Acquisition System (ITAS):

Product Manager
ITAS
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Redstone Arsenal, AL 35898-5710

TOW Missile:

Project Manager
Close Combat Anti-Armor Weapon Systems
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Redstone Arsenal, AL 35898-5710

Vehicle Teleoperation Capability (VTC):

Product Manager-VTC
Unmanned Ground Vehicles/Systems
JPO
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Redstone Arsenal, AL 35898-8060

Volcano:

Product Manager
Mines, Countermines, and Demolitions
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Picatinny Arsenal, NJ 07806-5000

Wolverine:

Product Manager
Combat Mobility Systems
ATTN: SFAE-ASM-CV-H
Warren, MI 48397-5000

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ISBN 0-16-048989-X



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